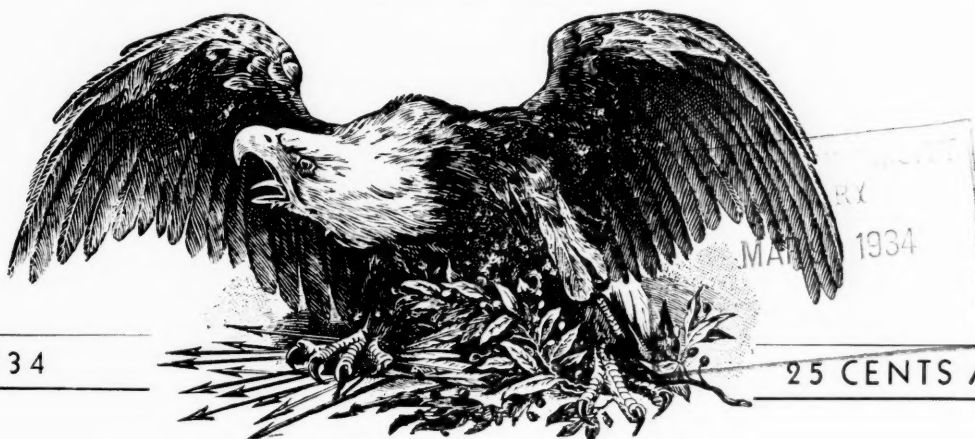


# Manufacturers Record

Reg. U. S. Patent Office



MARCH 1934

25 CENTS A COPY

## WEALTH AND INCOME

Once more the curve of the nation's wealth and income has turned upward.

Latest estimates indicate that the wealth of the country is now more than \$280,000,000,000, and the annual income of its people is at the rate of \$70,000,000,000. The gross farm income in 1933 was \$6,094,000,000, a gain of \$1,240,000,000, or 24 per cent over 1932. Between 1929 and 1932, the value of all property declined to approximately \$220,000,000,000 and national income, salaries, wages, dividends, interest, rents, crop values, etc., dropped to about \$50,000,000,000.

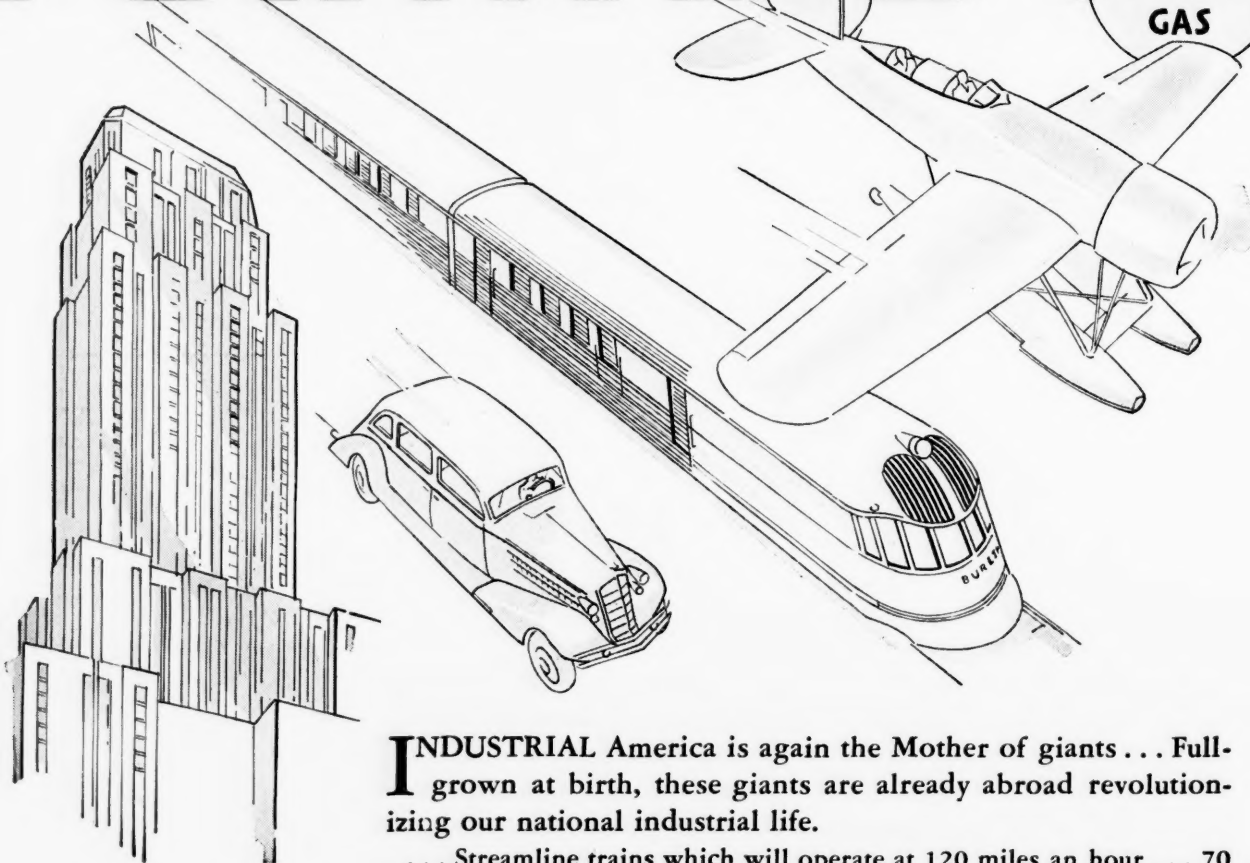
The South has shared largely in the upturn in wealth and income due to increased prices, increased payrolls and increased industrial output. From the low of approximately \$65,000,000,000 representing property values in 1932, the wealth of the South is now probably \$73,000,000,000. The output of its principal crops alone increased in value in 1933 by approximately \$620,000,000, 54 per cent over 1932, and its livestock is valued at \$109,000,000 more, or a 13 per cent gain over 1932.

The total value of the output of the South's farms, mines and factories in 1933 was approximately \$11,000,000,000. While increased prices in farm crops and other commodities added to the production values in 1933, gains were made in output of iron, coal, petroleum, cotton manufacturing and other major items contributing to the productive capacity of the South, giving an increased buying power which has been reflected in increased sales of merchandise of all kinds.



# FORWARD!

70  
OCTANE  
GAS



**I**NDUSTRIAL America is again the Mother of giants . . . Full-grown at birth, these giants are already abroad revolutionizing our national industrial life.

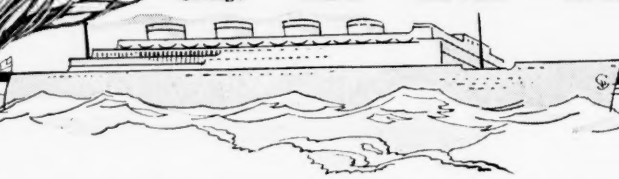
. . . Streamline trains which will operate at 120 miles an hour . . . 70 octane gasoline . . . stabilizers for ocean-going liners . . . Pan-American air service . . . air conditioning for the Tropics . . . and **PREFORMED WIRE ROPE**, the greatest basic improvement in this field of industry for over 75 years.

LAY-SET **Preformed Wire Rope** was one of the *first-born* of this NEW ERA, with its wires and strands shaped in manufacture to take the helical shape of the rope and thus eliminate internal stress. After nine years, during which time thousands of service records have proven LAY-SET's superiority, a large portion of industry will no longer accept ordinary wire rope with its eighteenth century methods of manufacture and its premature failure on the job.

LAY-SET is replacing *non*-preformed wire rope everywhere because it lasts longer, is easier to handle, easier to splice, cuts without seizing and maintains perfect strand balance as long as it lasts. It can be had in any standard construction, size or lay. Write for complete information today to



**HAZARD WIRE ROPE COMPANY**  
New York      Wilkes-Barre, Pennsylvania      Tacoma  
Pittsburgh      Fort Worth      Philadelphia  
Chicago      Los Angeles      Birmingham  
Denver      San Francisco



Entered as second-class matter at the postoffice, Baltimore, Md., under the act of March 3, 1879. Volume CIII, No. 3 Monthly.



# "WITH TWO

## 'CATERPILLAR' DIESELS OUR FUEL SAVING IS \$748.80 PER MONTH"

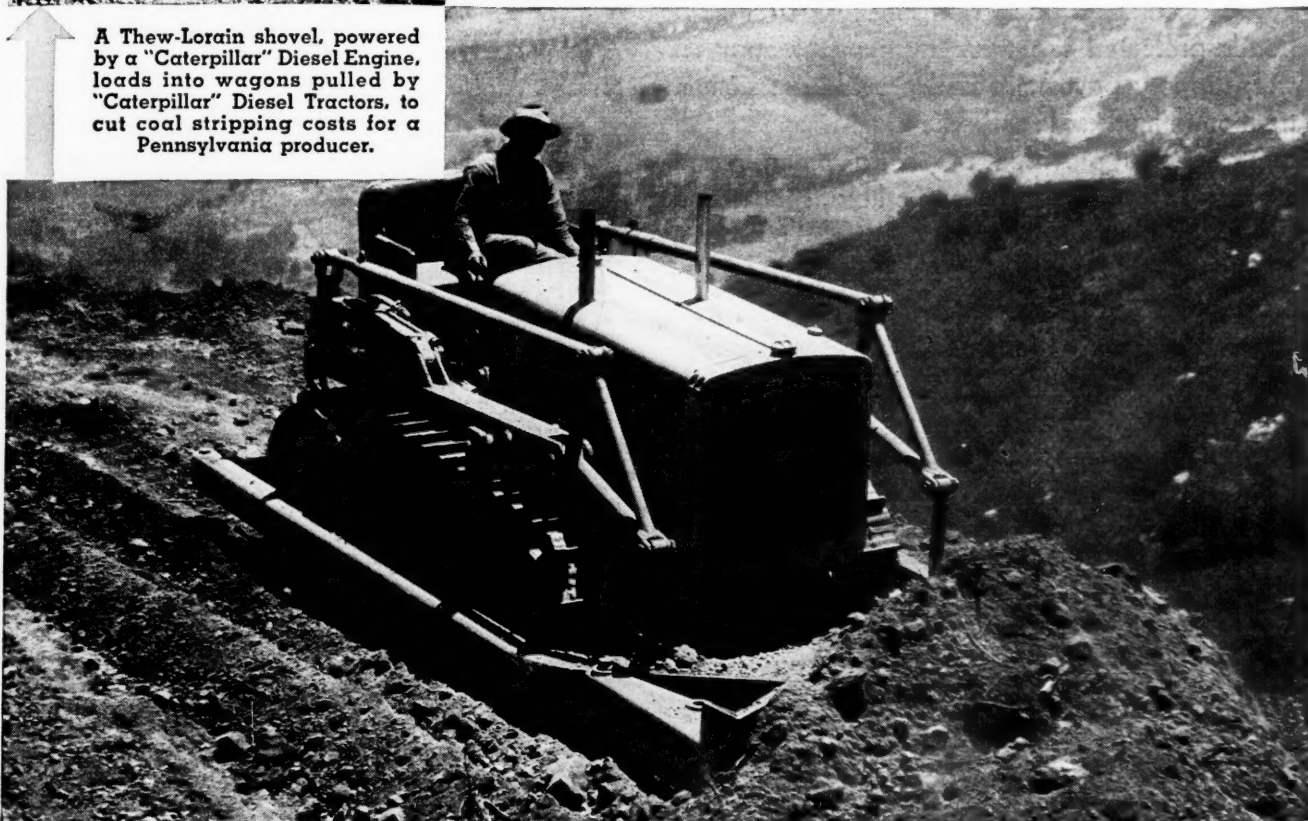


A Thew-Lorain shovel, powered by a "Caterpillar" Diesel Engine, loads into wagons pulled by "Caterpillar" Diesel Tractors, to cut coal stripping costs for a Pennsylvania producer.

● ● says Clarence Crow of Crow Brothers, Southern California contractors, working 16 hours per day, 26 days per month, saving 90c per hour on fuel with each tractor.

Fuel economy — the economy of using low-price fuel and less of it — brings worth-while savings on every job, big or small. That's why "Caterpillar" Diesel Tractors are sweeping into favor with tractor users everywhere. That's why "Caterpillar" Diesel Engines are being employed by so many stationary power users, and have been adopted by builders of shovels, drag lines, gravel plants, locomotives and other equipment, to power their machines. Fuel economy — plus easy operation, simplicity, stamina. Ask for full information. Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

## AMERICA GOES DIESEL



"Casting-in" with a "Caterpillar" Elevating Grader on road work, this "Caterpillar" Diesel Seventy-Five Tractor moves 4000 yards per day at a fuel cost of \$2.48.

Pushing a "trailbuilder" blade, this "Caterpillar" Diesel Tractor makes a new mountain road at a fuel-cost about one-quarter that of a gasoline tractor.

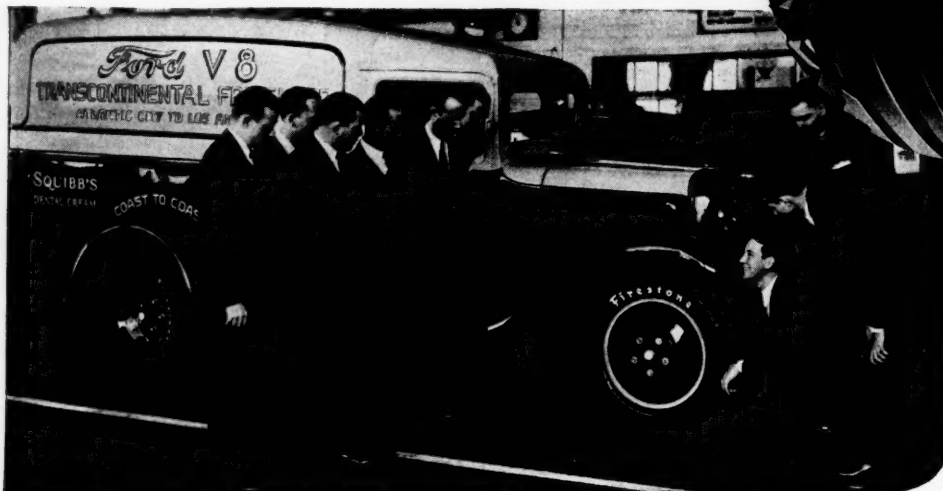




# Across the Continent IN LESS THAN ! THREE DAYS.

**A**NOTHER outstanding world performance record on Firestone High Speed Tires! This Ford V-8 1½ ton truck with a two-ton pay load and five passengers completed the record run from Atlantic City to Los Angeles in 67 hours, 45 minutes, 30 seconds actual running time.

The scientifically-designed Firestone Non-Skid treads protected the truck against skidding on wet, slippery pavements and provided maximum traction in mud and sand. The Gum-Dipped High Stretch Cords provided the extra strength and stamina to withstand the terrific heat, shocks and strains of high speed over all types of roads. Equipped with Firestone Puncture Proof Tubes there was not one pound variation in air pressure from the start of the trip to the end.



● Equip your fleet of trucks today with new Firestone High Speed tires and learn what dependable, low cost service these record-breaking tires will give in Your Operations.

●  
*Listen to the "Voice of Firestone" Every Monday Night Over N. B. C.—WEAF Nationwide Network*

# Firestone

Copyright, 1934, The Firestone Tire & Rubber Co.



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**MARCH  
1934**

Volume CIII—No. 3

## MANUFACTURERS RECORD

Devoted to the Upbuilding of the  
Nation Through the Development  
of the South and Southwest as the  
Nation's Greatest Material Asset

*Published Monthly*

by the  
**MANUFACTURERS RECORD  
PUBLISHING CO.**

Frank Gould, President

Main Office: Manufacturers Record Building, Commerce  
and Water Streets, Baltimore, Md.

Branch Offices:  
New York—11 W. 42nd St.  
Chicago—10 S. LaSalle St., Room 608

Subscription Rate: \$2.00 a year (in advance). Single  
copies, 25c; back numbers, one to six months, 50c each;  
over six months, \$1.00. Combination rate for Manufac-  
turers Record and Daily Construction Bulletin, \$10.50  
a year.

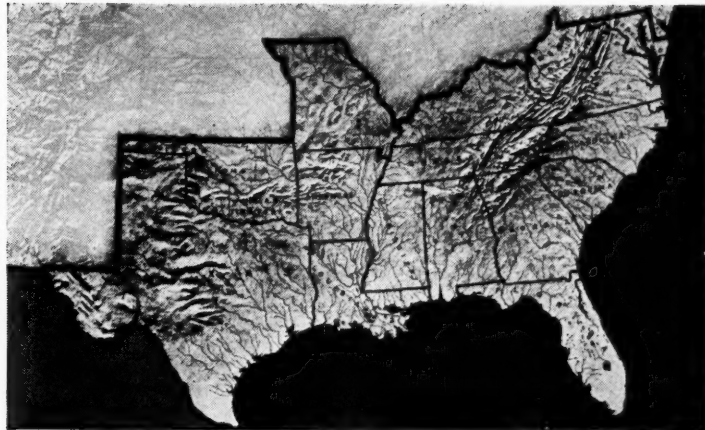
Subscribers are asked to notify us of change in  
address to avoid delay in service.



**PUBLISHERS DAILY CONSTRUCTION BULLETIN AND  
BLUE BOOK OF SOUTHERN PROGRESS**

Member, A.B.C.

**MARCH NINETEEN THIRTY-FOUR**



The South has 31.8 Per Cent of the Land Area and 33.6 Per Cent of the  
Population of the United States

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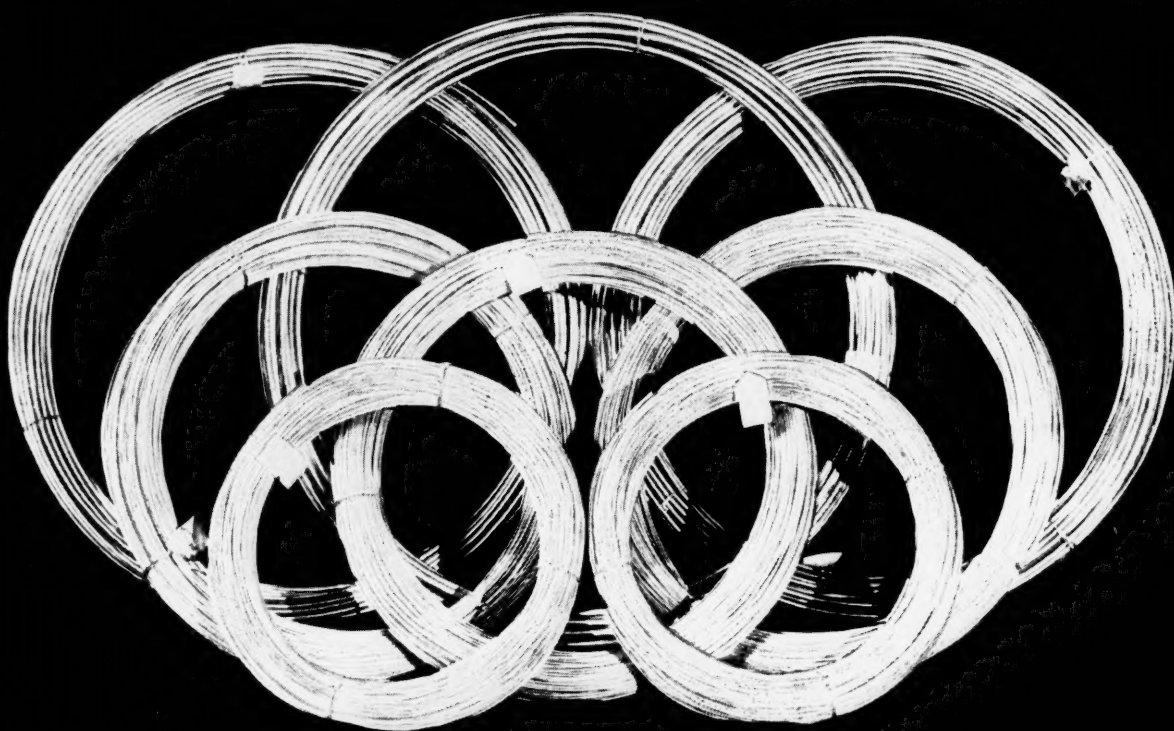
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Cold Heading Wire	Spoke Wire
Hinge Wire	Spring Wire
Machine Screw Wire	Wood Screw Wire, Etc.
Pail Bail Wire	

THE YOUNGSTOWN SHEET AND TUBE CO.  
 Manufacturers of Carbon and Alloy Steels  
 General Offices - - YOUNGSTOWN, OHIO

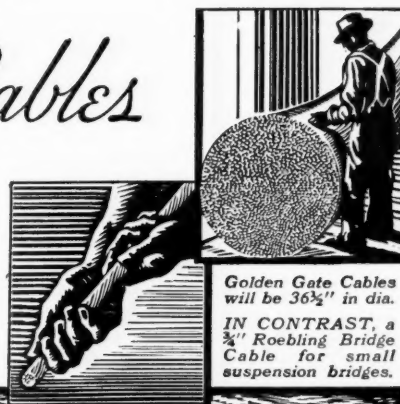
*Whisper*



# 80,000 MILES OF WIRE

## *in Golden Gate Bridge Cables*

22,000 Ton Cables to be spun by Roebling  
...of Roebling Open-hearth Steel Wire...  
famed for strength, toughness and stamina



Artist's conception of the great suspension bridge which will span San Francisco's renowned Golden Gate. Roebling will furnish main cables, suspenders, and cable accessories.

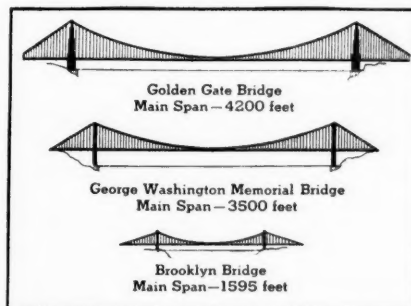
BRIDGE HISTORY is being made in San Francisco. A new king of suspension bridges....the Golden Gate....soon will be crowned. It will be the longest single clear span in the world.

Just try to picture this new ruler of the bridge world! Its main span will be almost three times the length of the main span of the famous Brooklyn Bridge. It will have the highest and largest bridge towers in the world.

80,000 miles of Roebling Wire will be used for the two main cables....enough wire to

girdle the globe three times. Each cable will be 36½ inches in diameter, weigh 11,000 tons, and contain 27,572 separate wires. Load supporting capacity of the two cables: 215,000 tons.

For over 90 years Roebling has been the pacemaker in the development of



wire rope and bridge cable. Full recognition of this fact is evidenced by the widespread use of these Roebling Products for every need from the largest to the smallest. They assure the highest obtainable degree of safe, dependable, economical service.

**WIRE ROPE FOR ALL NEEDS...**  
**LARGE OR SMALL:** No matter how exacting the service, or how large or small the order may be, Roebling can meet your requirements. And your order will receive the same careful, prompt attention, whether for a carload of rope or merely a few feet. John A. Roebling's Sons Company, Trenton, N.J. Branches in Principal Cities.

**ROEBLING**  
*The Pacemaker in Wire Rope  
and Bridge Cable Development*



# REX CHAIN

**FOR EVERY DRIVE & CONVEYOR**

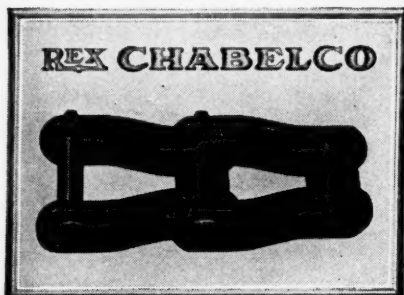
**FOR HIGH SPEED—FOR HEAVY DUTY**

## REX ROLLER CHAINS

— for all high speed drives —  
available in all standard sizes, in  
single and multiple strands to



meet the requirements for prac-  
tically any high speed plant or  
duplicate machinery drive

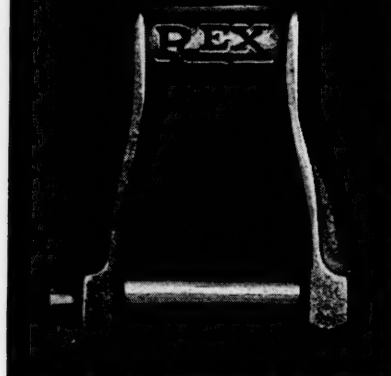


## STEEL DRIVE CHAINS

An all steel roller chain for all  
types of heavy duty, with rela-  
tively high working speeds. The  
unit link principle by which the  
accurately made and machined  
parts of this chain are assembled  
makes it particularly efficient for  
severe service. Also made in long  
pitch conveyor sizes up to any  
practicable strength.

## REX Z METAL CHAIN

*The Greatest Chain  
EVER CAST*



## CHAINS OF MANY USES

Rex Z-Metal Chain, a chain cast  
in all malleable patterns, is ap-  
proximately 30% stronger than  
the best malleable iron of the  
same number and is much more  
resistant to corrosion, abrasion  
and pounding. It finds a wide  
variety of uses in both plants  
and machine assemblies. Where  
trouble is met with malleable  
chains it is frequently the answer  
—at low cost . . .

## OTHER REX CHAINS

The Chain Belt Company also  
makes a complete line of sprocket  
chains for every type of use—as  
well as a wide line of special chains.  
Complete information on request.

**CHAIN BELT COMPANY**  
1626 W. Bruce St. MILWAUKEE, WIS.

# CHAIN BELT COMPANY

**CHAIN & BELT CONVEYING**



# *This Booklet* **WILL HELP YOU MEET PLANT PAYROLLS**



**H**IGHER wages! Shorter working hours! Payrolls cannot be further reduced. Operating cost cuts must yield the savings which are needed to meet payrolls and show profits in 1934.

Gulf's 7 Point Plan for Industrial Lubrication has been designed to help you meet today's need for cost reduction in your plant. Here is a modern, scientific method of obtaining the economies you need. A new yard stick of operating efficiency!

If you, like most industrial executives today, are looking for new means and devices with which your plant operating costs can be reduced, we suggest that you familiarize yourself and your organization with this plan.



## *Write to-day*

**IF YOUR PLANT OPERATING COSTS  
MUST BE CUT . . . THE TOOLS TO DO  
THE JOB ARE AT YOUR COMMAND . .**

**GULF REFINING COMPANY**  
3800 Gulf Building  
Pittsburgh, Pa.

Please send me, without charge, "Gulf's 7 Point Plan for Industrial Lubrication."

Name.....

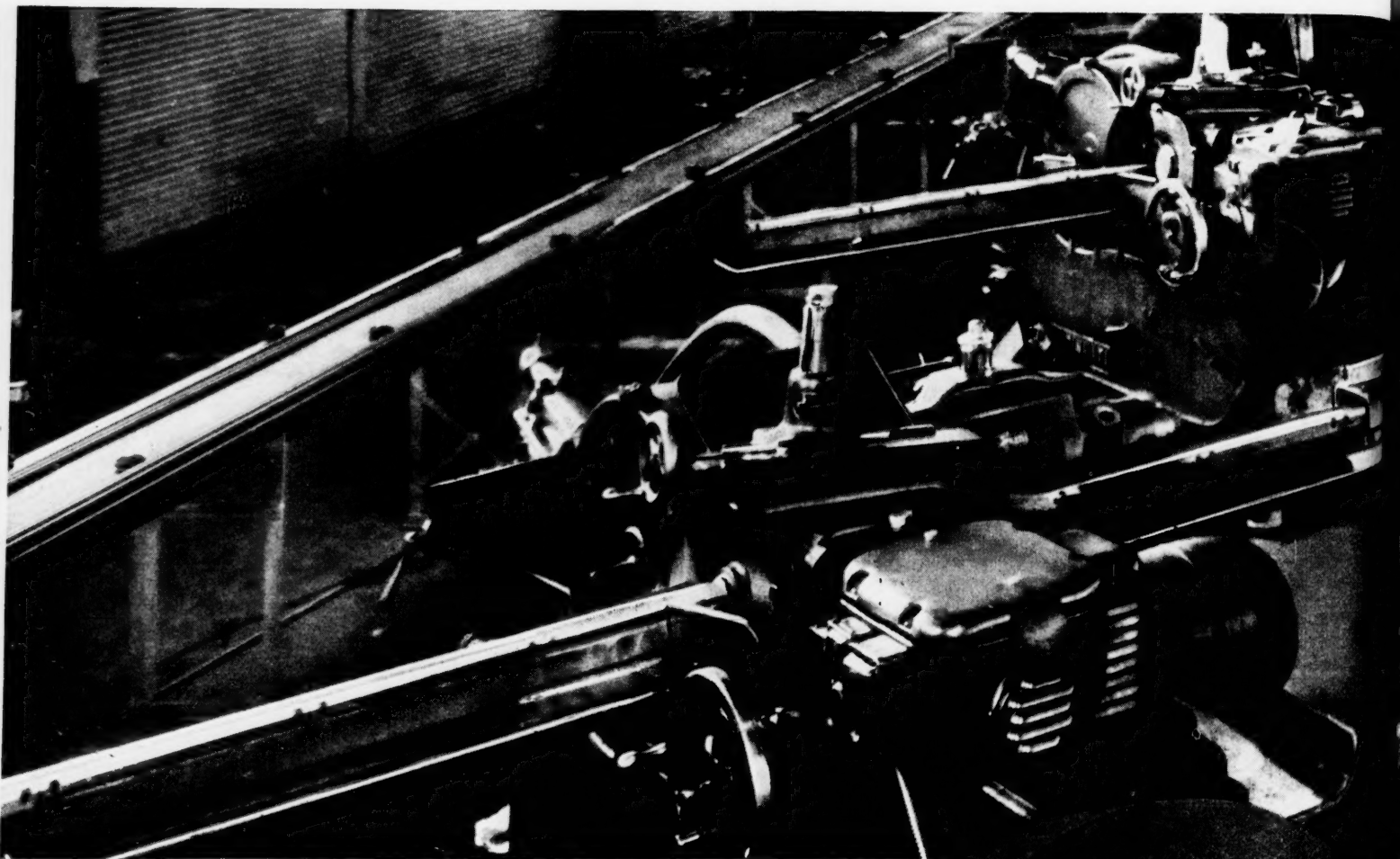
Company.....

Address.....

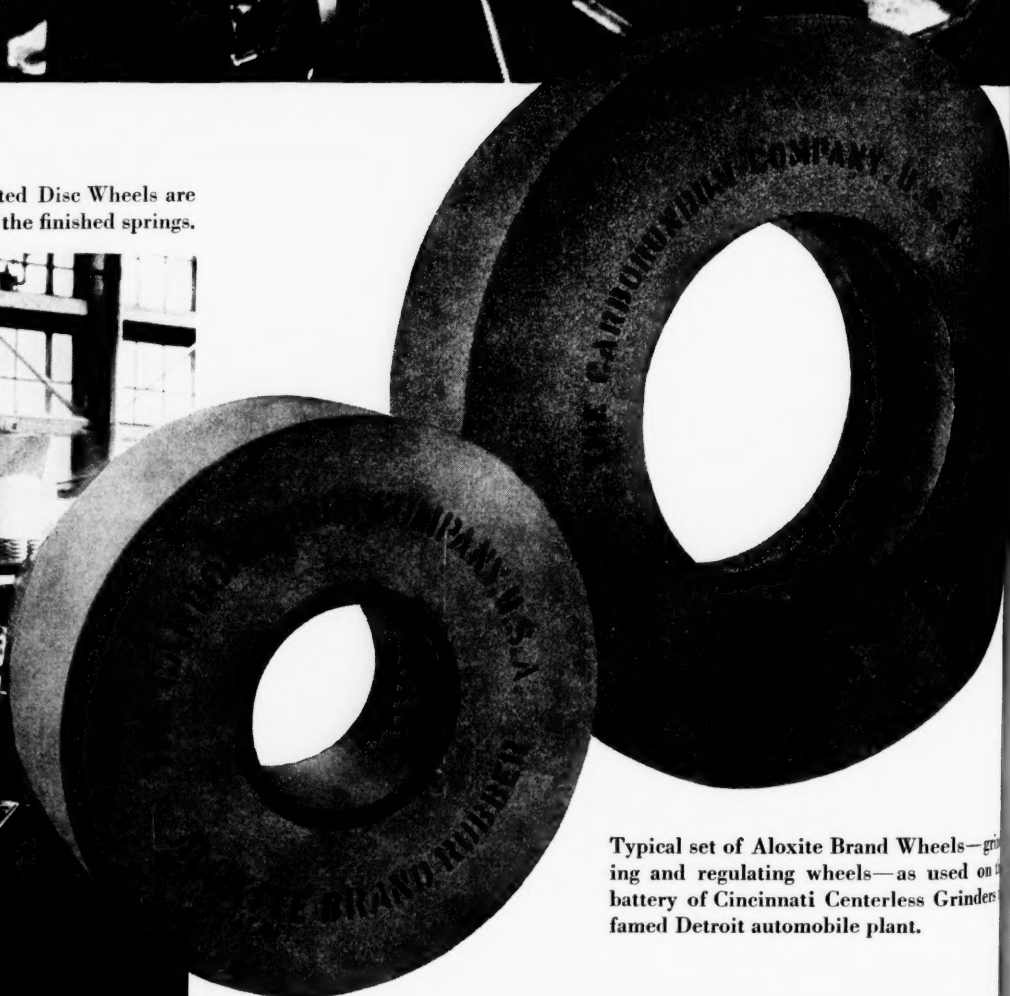
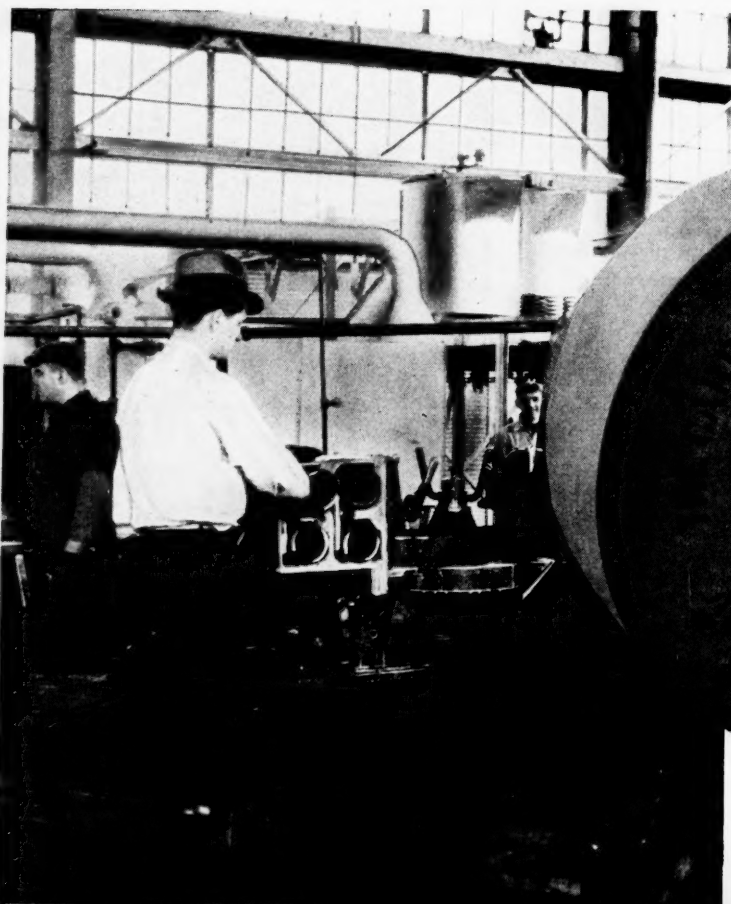
MR 3



# 1934's DRASTIC AUTOMOBILE



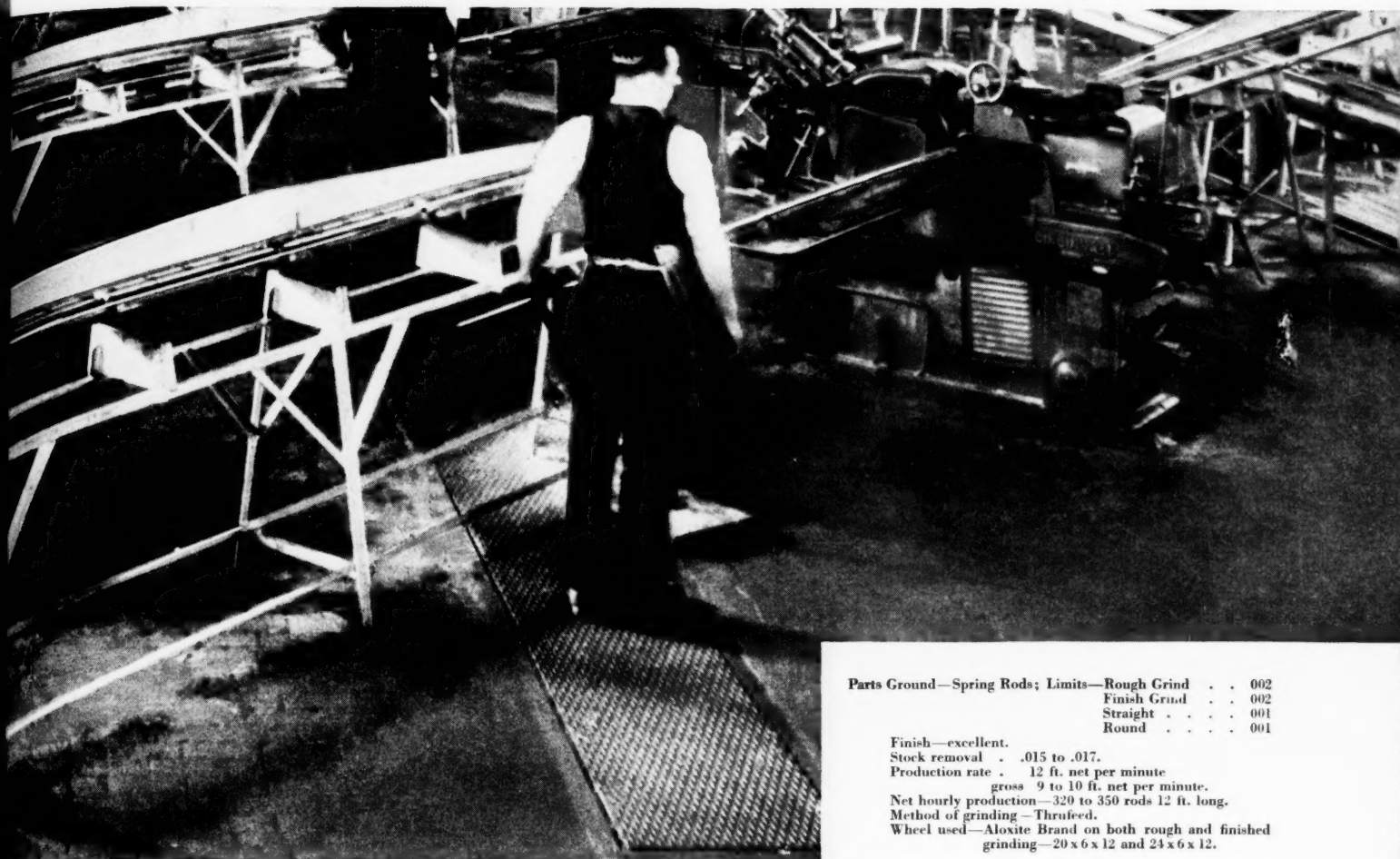
Below—Aloxite Brand Mounted Disc Wheels are used in the grinding of ends of the finished springs.



Typical set of Aloxite Brand Wheels—grinding and regulating wheels—as used on the battery of Cincinnati Centerless Grinders in the famed Detroit automobile plant.



# BIL CHANGES FOUND US READY!



Parts Ground—Spring Rods; Limits—Rough Grind . . . 002  
 Finish Grind . . . 002  
 Straight . . . 001  
 Round . . . 001

Finish—excellent.  
 Stock removal . . . .015 to .017.  
 Production rate . . . 12 ft. net per minute  
                                   gross 9 to 10 ft. net per minute.  
 Net hourly production—320 to 350 rods 12 ft. long.  
 Method of grinding—Thrufeed.  
 Wheel used—Aloxite Brand on both rough and finished  
                                   grinding—20 x 6 x 12 and 24 x 6 x 12.

## When independent front wheel suspension arrived...we met the new grinding conditions

**C**ARBORUNDUM Engineering, always identified with every advanced development, has solved the grinding problems attendant upon the new, revolutionary automobile independent front wheel suspension—termed Axelflex, Knee Action, Individual Suspension; Floating Cushioned Wheels, etc.

It meant new parts to be ground. New steels to be dealt with. New grinding conditions—coupled with greater accuracy, better finishes and the demand for high production. We had to be ready with the grinding wheels, abrasive discs and other products to meet these new conditions. In fact, we had to be ahead of the industry. We had to be ready to supply the right wheels to carry on early experimental grinding work, which resulted in grinding units capable of extremely high production—capable of getting out the work quickly, easily, efficiently.

Grinding plays an all important part in this new development conducive to comfortable riding. We are proud to say that "Carborundum" Research has most adequately solved these new grinding problems in a number of the great automobile plants.

It is reasonable to assume that Carborundum Engineering Service and Carborundum Brand Abrasive Products can improve *your* present grinding conditions or conquer the new.

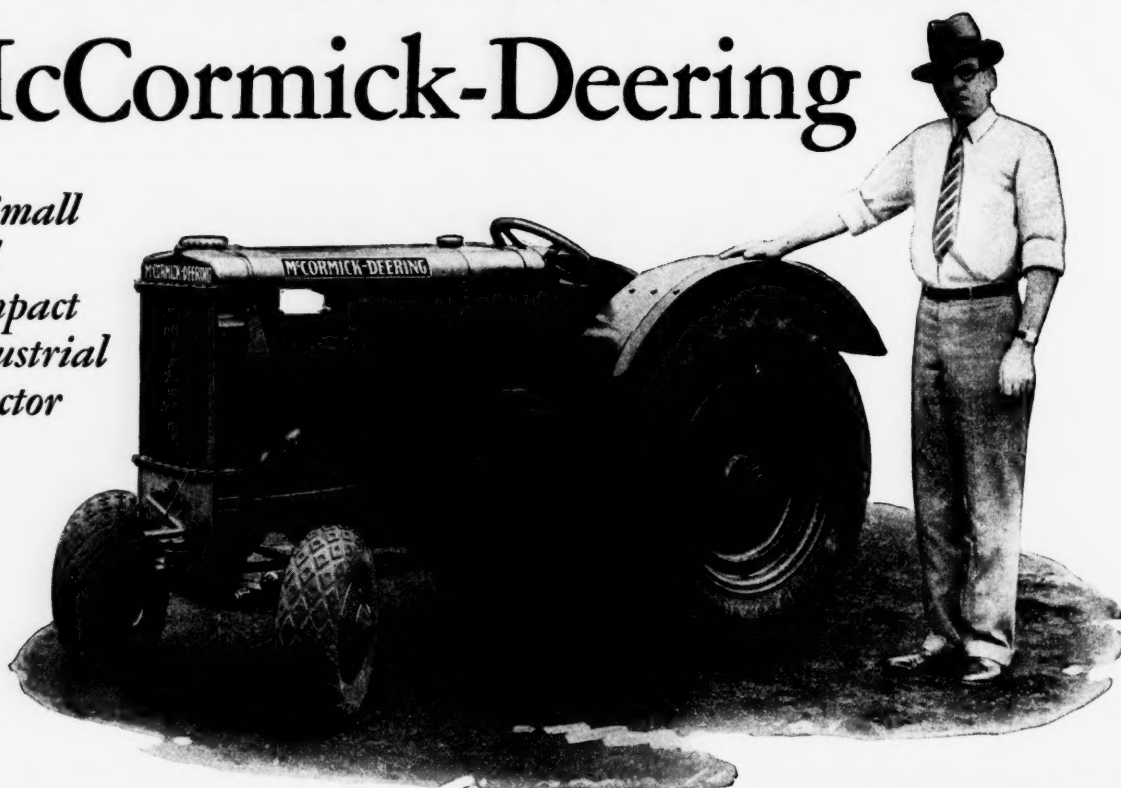
### **CARBORUNDUM and ALOXITE** BRAND **ABRASIVE PRODUCTS**

THE CARBORUNDUM COMPANY, NIAGARA FALLS, N. Y.  
 Canadian Carborundum Co., Ltd., Niagara Falls, Ont. Offices and warehouses in New York, Chicago, Boston, Philadelphia, Cleveland, Detroit, Cincinnati, Pittsburgh, Milwaukee, Grand Rapids; Toronto, Ont. (Carborundum and Aloxite are registered trade marks of The Carborundum Company.)



# Here It Is . . . the Model I-12 a NEW and Nimble McCormick-Deering

*A Small  
and  
Compact  
Industrial  
Tractor*



**I**NTERNATIONAL HARVESTER announces the Model I-12—a New McCormick-Deering Industrial Tractor. The I-12 is small, compact, has a range of speeds from  $2\frac{1}{2}$  to  $10\frac{1}{4}$  miles per hour, and turns in a radius of  $8\frac{1}{2}$  feet.

The International-built engine features replaceable cylinders, down-draft carburetion, induction-type magneto, oil air cleaner, oil filter with a metal element that is cleaned easily, and foot accelerator and hand throttle. Transmission and countershaft are *ball-bearing*—there are 17 *ball bearings* and 6 *tapered roller bearings* in the I-12. Steering worm is mounted on roller bearings.

The rear axle is designed for *uniform stress* to withstand shock loads all the way across. It is semi-floating, mounted on 4 ball bearings, and oil seals give protection against grit and dirt. Muffler, pintle-hook type spring-cushioned drawbar, and comfortable spring seat are regular equipment. Accessible machined surfaces are provided for mounting industrial equipment.

Ask the nearest International branch, or McCormick-Deering distributor or dealer, for information on the McCormick-Deering Model I-12. Write us for catalogs.

**INTERNATIONAL HARVESTER COMPANY**

606 So. Michigan Ave.

of America  
(Incorporated)

Chicago, Illinois



## *Brief Specifications:*

**Engine:** 4-cylinder, valve-in-head type, 3-inch bore x 4-inch stroke. Speed variable to 2000 r.p.m.—foot accelerator and hand throttle controlled. Replaceable cylinders. Down-draft carburetor. Force-feed lubrication (drilled crankshaft). Thermo-syphon cooling. Oil filter. Oil air cleaner. Induction-type magneto. 8-inch single plate clutch.

**Transmission:** 3 speeds forward, 1 reverse.  $2\frac{1}{2}$  to  $10\frac{1}{4}$  m.p.h. 4 ball bearings.

**Frame:** Two-piece construction. Transmission, countershaft and differential, rear axle, and final drive gears enclosed.

**Front Axle:** 4 tapered roller bearings for front wheels.

**Rear Axle:** Semi-floating, with 4 ball bearings. Oil seals.

**Brakes:** Internal expanding type. Operated by foot pedal.

**Wheels:** Low-pressure pneumatic tires. Front—6.00/9 ( $21\frac{1}{2}$  inches o. d.). Rear—9.00/24 ( $42\frac{3}{4}$  inches o. d.).

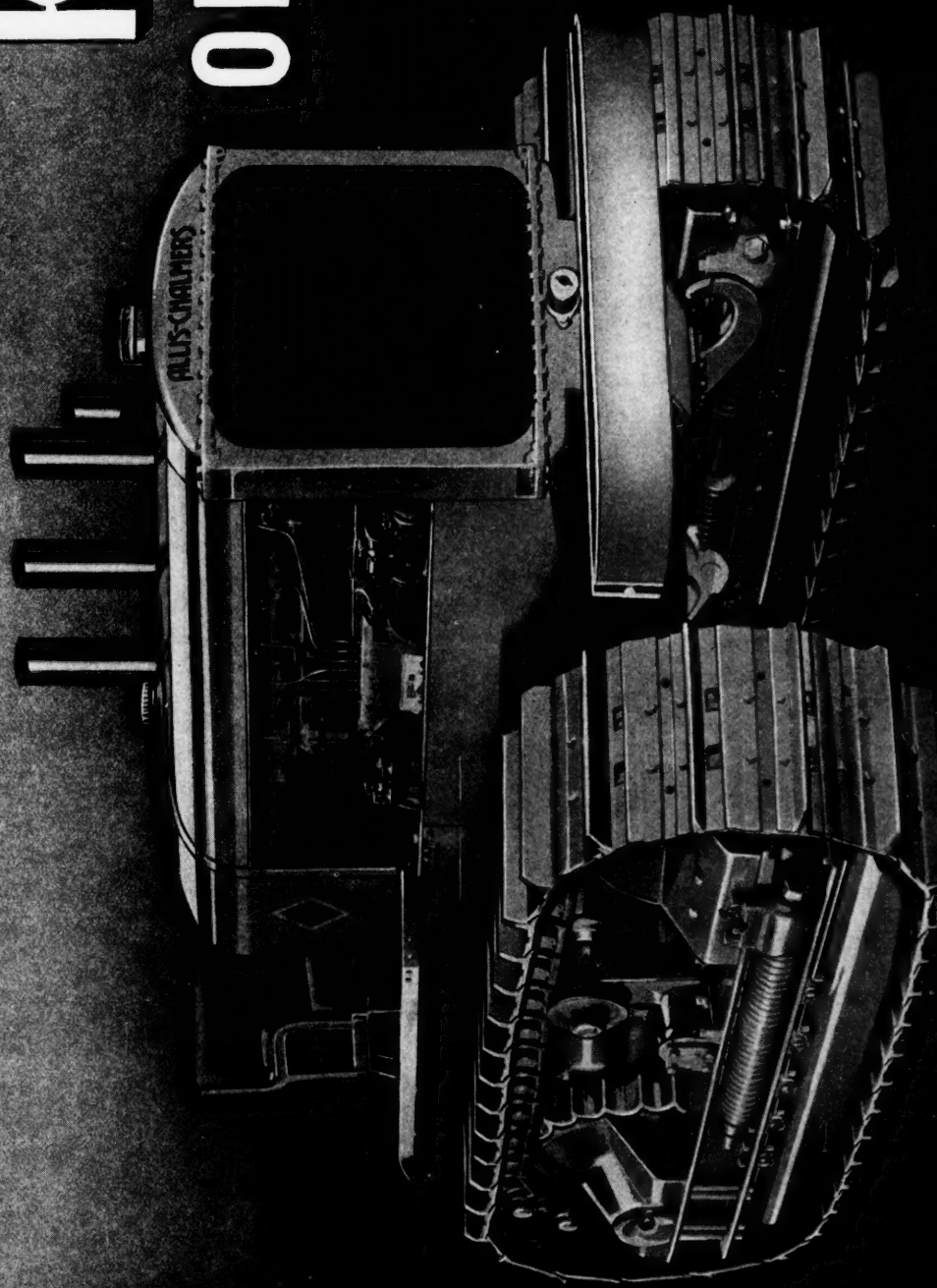
**Fuel Tank:** Capacity—11 gallons.

**Dimensions:** Turning radius,  $8\frac{1}{2}$  feet; length overall, 96 inches; width overall, 50 inches; height over steering wheel, 52 inches; front wheel tread,  $39\frac{3}{8}$  inches; rear wheel tread,  $40\frac{1}{2}$  inches; wheelbase, 60 inches.

Power take-off available.



# ANNOUNCING *the New models* "KO" AND "LO" OIL TRACTORS



THE "LO" OIL TRACTOR

THE New Allis-Chalmers Oil Tractors are equipped with a new type of oil engine which operates on Diesel fuel. These engines introduce an entirely new principle in tractor engine design.

We use a Bosch Diesel fuel pump to inject the cold charge with cold air and ignite it with a spark. We do not depend on compression for ignition, but use the time-tried magneto.

The low pressures and orderly burning of the fuel in the A-C oil engines assure a smooth running engine with unexcelled lugging ability and ample power. Fuel consumption is low at all loads.

Two models are now available—the model "KO", developing 48 drawbar horsepower and weighing approximately 11,200 pounds—and the model "LO", developing 76 drawbar horsepower and weighing approximately 23,000 pounds.

Write for further information.

POWER CONTROLLED GRADERS  
HAND CONTROLLED GRADERS  
SPEED PATROL GRADERS  
TRACK-TYPE TRACTORS  
ELEVATING GRADERS

## ALLIS-CHALMERS

TRACTOR DIVISION—MILWAUKEE, U. S. A.

POWER UNITS ....  
MODELS 40, 50, 60, 90, H. P.  
WHEEL TYPE TRACTORS  
TRACK TYPE WAGONS  
WAGON TRACKS





from an  
unretouched  
photograph  
taken 10-20-33

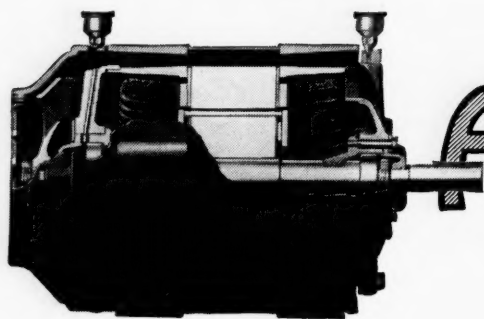
.... but the inside is as clean as  
the day the motor was built.

**T**HIS motor drives an exhaust fan in a plant refining chlorine gas and compounds of chlorine. For years, the motor had to be replaced every month due to the corrosive action of the gases passing over and through it. Several makes of motors were used on the fan, some of them having as many as ten coats of varnish on the coils, but, in spite of the heavily reinforced insulation, **THE AVERAGE LIFE OF THE MOTOR WAS ONLY 30 DAYS.**

In June, 1928, one of the newly developed Allis-Chalmers totally-enclosed, fan-cooled motors was installed on this drive. It operated for a year without a shut-down and was then removed for inspection. The outside was badly corroded but when the motor was opened up all of the inside parts were found to be as clean as the day the motor was built. The machine was put back on the job and is still running after 5½ years of service.

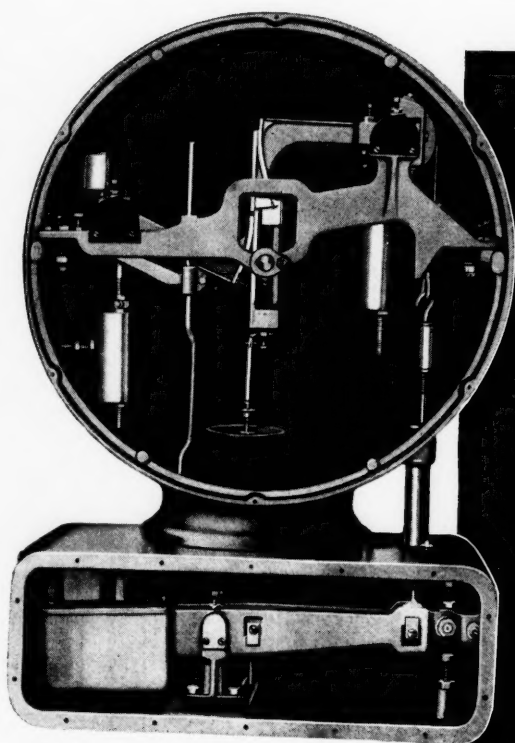
This is only one instance of saving money with Allis-Chalmers Motors. If you have any drives that are causing trouble write the nearest Allis-Chalmers office or —

Allis-Chalmers Mfg. Co., Milwaukee, Wis.



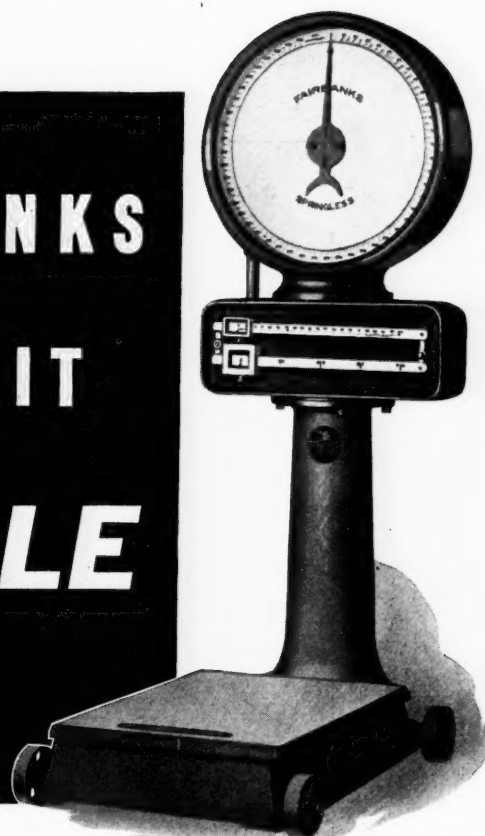
**ALLIS-CHALMERS**  
Totally Enclosed  
Fan-cooled **MOTORS**





Rear view of dial mechanism.  
Note large, sturdy parts.

# FAIRBANKS MADE IT SIMPLE



A typical Fairbanks Dial Scale



Dial mechanism removed from  
housing to show simplicity.

The modern scale, itself, is a Fairbanks invention! The first springless dial scale was a Fairbanks achievement. The long list of scale improvements since 1830 is a record of Fairbanks engineering.

Today, the Fairbanks Dial Scale has been brought to its peak of simple efficiency by Fairbanks research.

Gone are the myriad small parts and complicated mechanism—Fairbanks has made the dial *simple* and *trouble-free*. A sound design which spreads the dial mechanism to *fill* the housing permits the use of large, sturdy parts.

Fairbanks Dial simplicity means long life and retained accuracy under the most adverse of service conditions. It is the reason why the Fairbanks Dial Scale is the choice of men alike who know scale mechanisms—and the choice of those who judge by performance alone. For bulletins on Fairbanks Scales for your particular service, write, telling us in what kind of service you employ scales, to Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago, Illinois. And 40 Principal Cities—a Service Station at Each House.

# Fairbanks Scales



PREFERRED THE WORLD OVER

6040 SA40.2

MARCH NINETEEN THIRTY-FOUR

15



*Seventy-First Annual Statement—Year Ending December 31, 1933*



**BUSINESS OF 1933**

New Insurance Paid-for, including Revived and Increased . . . . .	\$633,084,546.00
Payments to Policyholders and Their Beneficiaries . . . . .	98,395,157.73
Increase of Assets . . . . .	16,208,674.81
Increase of Safety Funds . . . . .	1,582,980.43

**STANDING AS OF DECEMBER 31, 1933**

Outstanding Insurance . . . . .	\$3,411,708,382.00
Admitted Assets . . . . .	655,664,366.32
Liabilities . . . . .	611,510,765.98

<i>Including: The legal reserve on policies in force . . . . .</i>	<i>\$546,151,593.00</i>
<i>Dividends to policyholders for 1934 . . . . .</i>	<i>16,054,788.60</i>
<i>Special Contingency Reserve . . . . .</i>	<i>15,000,000.00</i>

General Surplus or Safety Fund . . . . .	\$44,153,600.34
<b>GENERAL SURPLUS AND CONTINGENCY RESERVE</b>	<b>59,153,600.34</b>

**SUMMARY OF ASSETS**

Bonds and Stocks (Insurance Commissioners' Standard) . . . . .	\$192,688,803.77
Real Estate Mortgages . . . . .	259,266,129.63
Loans on Company's Policies . . . . .	96,247,133.61
All Other Assets . . . . .	107,462,299.31
<b>TOTAL ASSETS</b>	<b>655,664,366.32</b>

<i>Including: Cash in Office and Banks . . . . .</i>	<i>\$15,568,825.63</i>
<i>United States Government Bonds and Notes . . . . .</i>	<i>20,406,584.49</i>
<i>Short-term obligations of other government bodies . . . . .</i>	<i>9,071,101.38</i>

WALTON L. CROCKER, *President*

In 71 years this company paid to policyholders and beneficiaries \$973,029,840.43

**ERNEST J. CLARK, *State Agent***

Maryland and District of Columbia, Baltimore, Md.  
1039-1055 Calvert Building

**FRANK H. ZIMMERMAN, *District Manager***

4th Floor, Morris Building, Baltimore, Md.  
Charles and Saratoga Streets

**JOSEPH J. DUFFY, *District Manager***

208 Old Town National Bank Building, Baltimore, Md.  
Gay Street and Fallsway



# • Manufacturers Record •

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## CONSTRUCTIVE CRITICISM NEEDED

**I**T was a constructive thought on the part of the Administrator to suggest a meeting of the critics of the NRA. The effectiveness of the idea and of the criticisms offered will be shown by later events. It is a healthy thing just now in this country to encourage constructive criticism and it will be a sad and unhealthy thing if it is stopped.

We have abandoned virtually all the economic rules followed in the past, although American progress and the well-being of the people of this country are envied by the rest of the world. To overcome the depression which followed the greatest war in history, we are changing to a confusing variety of new and untried ways that will control our course and progress for an indefinite future.

What is being done has been permitted, because no alternatives were offered from responsible quarters that seemed better. Faced with a great decline in business and increasing unemployment and distress, the turn to Government for help was general. It was natural and understandable. But it is doubtful if many imagined there would be adopted, one after the other, measures that mean regimented activities with Government control so extended as to lead to control of production of every kind and eventual control of prices.

With the help of its effective press bureau, the NRA was well received, enthusiastically tried and has done good. But the critics being among those who have struggled to conform to the requirements of codes and higher prices for labor, with shorter hours, find it has not all worked out as expected.

Questions are being asked and changes demanded. Is organized labor to have the supreme control it wants over employment? How long can prosperity wait upon higher prices and shorter working hours, which are to be shortened still further? Heretofore higher prices have followed prosperity and not preceded it. The questions and doubts reach to other phases of the Government and legislative program.

The country is faced with increasing taxation, and yet the Senate votes to spend additional hundreds of millions that will almost completely upset the economy measures adopted a year ago. While waiting on prosperity, as the tax load grows, it is no wonder the criticisms become more pronounced.

Increasing Government activities in the field of private industry are disturbing. The dream of a Senator about Tennessee River development has been undertaken with the announcement that similar undertakings will extend to the Missouri River Valley and other places, and people ask how far this may go and what other public officials may have dreams about other forms of activity which heretofore have been developed through private initiative.

The history of Government undertakings of the past offer everything else but convincing proof that this is the mission of Government.

Farmers are disturbed because they first were paid to restrict their crops and now are to be fined if they exceed allotments to be determined. They see controlled agriculture with task-masters to enforce the law. The news and Courier of Charleston sees a time when it is not impossible, even under the Constitution, that a degree of actual espionage over free Americans may be adopted by an oligarchy still under the name of the Constitution.

Government banks are being set up to finance foreign trade.

Congress is being asked for authority to give the President control over our tariffs, to regulate what may be shipped abroad and what may be received from abroad. This is too great a responsibility and power to place in the hands of any man.

What will be the powers of the proposed Federal Communications Commission, the new body Congress is asked to authorize to control radio, telephone and telegraph? Will they include the right of censorship of news?

These questions should be discussed and considered before we go too far in a direction from which the return will be exceedingly difficult.



## RAILROAD IMPROVEMENT

**A**S one looked at the streamline train of the Union Pacific Railroad, recently being exhibited throughout the country, it must be apparent that there is a field awaiting development in the rehabilitation of the great carrier systems of the country. Whether this recent invention is to be an accepted design that includes greatly increased speed and possibly lighter equipment, or whether there will be other improvements and changes in the way of progress, cannot be known, but it is important that the inventiveness and resourcefulness of America are to be exercised, putting our railroads in a position to meet competition and back in the market for equipment.

The interest shown by tens of thousands wherever this train has been exhibited goes beyond the mere fancy of curious people. Men in high places have seen in this exhibit the evidence of what may be a new day for railroads.

Railroads out of the market as buyers has been a tremendous cause of the continuance of the depression. These systems that have contributed to our national well-being have always been our greatest buyers of raw materials and finished products in wide variety. Their purchases, which averaged \$1,710,000,000 for the five years, 1925-29, have declined since the depression to \$450,000,000 or nearly 75 per cent.

For the five years, 1925-29, railroads expended annually an average of \$849,000,000 for maintenance of roadway and structures. In 1933 similar expenditures were only \$325,000,000 or 38 per cent of the 1925-29 average, and \$26,000,000 less than the outlay in 1932.

When considering the adverse effect of this upon manufacturing companies and producers of raw materials, it is evident that it is not only the stockholders who will benefit by putting the railroads back in their stride of progress, but virtually every other business interest of the country.

The Railway Age quotes figures to show the purchases of railway equipment, and this refers mainly to locomotives and cars, which averaged \$254,000,000 annually in the five years prior to 1930, declined in 1933 to a total of \$1,000,000, or 99 per cent. Purchases of lumber declined from \$153,000,000 to \$54,000,000, or 65 per cent, while purchases of iron and steel declined from \$395,000,000 to \$102,000,000, or 74 per cent.

The railway equipment and supply industry includes 3563 companies, with plants in 650 cities, so the effect of this terrific decline upon this wide flung business can be readily seen.

Naturally this rehabilitation only can take place as freight and passenger earnings justify, but in the meanwhile the railroads are alert in endeavoring to meet modern requirements of both freight and passenger travel. Air conditioning and store door deliveries are indications of the efforts adopted to see that the public is pleased. Now there comes a complete change in train design that, if generally adopt-

ed, will start the wheel in many plants that have been idle too long.

It has been suggested for years that lighter units run at more frequent intervals would be the answer to the competition that smooth highways and buses have offered. Lower fares already have resulted in greatly increased passenger travel in the South particularly.

From whatever angle the situation is viewed it is healthier in every respect than it has been and certainly all encouragement should be extended to the transportation systems that mean so much in the future growth of the country.

## SMALL INDUSTRIES UNDER N. R. A.

**M**ANY small concerns are finding difficulty in operating under N.R.A. conditions. Claims are made that the codes are favorable to big business. Industries employing 20 persons or less, which comprise three-quarters of the 200,000 manufacturing concerns in the United States, and small merchants handling 80 per cent of the country's distribution have been faced with higher wages and shorter hours without compensating profit advantages through increased sales volume at higher prices.

A manufacturer in a Southern town writes:

"Our own little business is adversely affected by the policy of making the Northern and Southern wage scale almost the same, without regard to the factors affecting Southern industry. For many years we operated on an absolute minimum wage of 15 cents an hour for unskilled workers, floor sweepers and common labor. Under our code the minimum wage is raised to 32½ cents an hour and other employees raised in proportion, with the result that our labor costs will be increased 100 per cent. Competition with Northern factories absolutely restrict our selling price differential to less than 5 per cent. Other manufacturers in our industry in the North will not be affected by the minimum wage rate as they have been paying at least as much all along."

If industry's locality advantages are reduced by a blanket wage scale and high freight rates many Southern plants will be seriously crippled or forced out of business. The efforts to decentralize will have been in vain. Due to climatic conditions, living costs in the South are lower than in the Northern section of the country. This has established a differential, set as high as 30 per cent by some authorities, that has always been recognized. If there is to be continued a minimum wage scale in the South almost as high as the level paid in congested centers, there is introduced a form of discrimination that will hamper Southern manufacturing progress, and an early review of such restrictive conditions on the part of those in authority is evidently called for.

**Interesting facts  
you may not know**

see page 48



## SOUTH CALLS TO MEN OF VISION

**P**ROGRESS has been the watchword and the inheritance of the American people. We have been a nation of doers, proud of our daring and achievements. To follow a negative course is abhorrent to our instincts and our desires. Therefore, the policy of recent months to curtail output and limit expansion, however imperative the emergency, has been accepted in the hope that it was a temporary policy—a halting to take a fresh start in the onward march. Be that as it may, is it not time now for men of vision and determination to put into action their convictions that the way to resume is to resume.

No better way to bring about general activity and employment can be found than to initiate the development of manufacturing enterprises that utilize domestic raw materials and require the products of capital goods industries. There are many industries which can be established to manufacture in this country products which are partly or wholly imported from foreign countries. The production of pine pulpwood and the manufacture of newsprint and white paper from Southern pine is an outstanding example of what can be done. The production and processing of tung oil, the production of manganese, synthetic camphor from turpentine and practically every imported commodity not of strictly tropical origin or based on a few rare minerals can be made an American industry giving employment to Americans.

We have the resources; we have the ability which can be made available for the creation of wealth producing enterprises within the United States. Some of the great chemical manufacturers of the country have predicted that the South in the expansion of its chemical industry will become the dominant chemical producing region of the United States. After the Civil War the West was opened to agricultural development which brought wealth to the entire nation. It was the major factor in overcoming a previous depression. The South with its vast and varied raw material resources has the potentialities of an industrial development that can be made to accomplish greater results in wealth creation.

At St. Petersburg, Fla., March 25-30, is to be held the 87th meeting of the American Chemical Society. As chemistry enters into practically every industry, this meeting can be made the turning point of our period of productive curtailment into one of expansion; from a policy of holding back to one of going forward. At that meeting will be gathered the leading scientists and business men of the country, the charters of new ways and methods, the perfecters of old and creators of new products. Therefore, it is appropriate that the South at this time shall remind the leaders of the chemical industry of the United States of its chemical resources and the advantages this section offers for their manufacture.

In the State of Florida, which will be host to the Chemical Society, a State which is not generally known for its chemical development possibilities, are

raw materials awaiting the call of the chemical engineer and the manufacturer. In a recent survey of the State's chemical industries, Professor C. B. Pollard of the University of Florida, pointed out that in addition to securing an adequate supply of pine pulpwood, it can produce cellulose in abundance from its fast growing trees. Cellulose is the raw material for the manufacture of Rayon, Cellophane, celluloid, artificial leather, photographic film, explosives, etc. In its sugar refining potentialities it can supply many by-products through chemical research. In its mineral wealth, consisting largely of non-metallic minerals, a great development of new industries based on chemistry is foreseen.

Florida now produces 80 per cent of the nation's phosphate rock and 50 per cent of the Fuller's earth. It has some of the finest china clay in America and other important common minerals, clay, limestone and sand. It has established plants manufacturing kraft paper, tung oil, sugar, Portland cement, brick, building board, glass, sulphuric acid, fertilizer, fish oil, gypsum and the chemist is playing a part in the development of citrus juice and canning plants.

Florida has a great lumber and naval stores industry, wood distillation and pine oil plants, and through the chemist it can turn some of its turpentine into synthetic camphor. It has the necessary raw materials, including treated rosin, tung oil and turpentine for the establishment of paint and varnish manufactures, sand for the making of glass, and essential oils largely imported from foreign countries.

In the neighboring State of Georgia is the world's largest Kaolin deposit, pine forests for paper and cellulose, the finest marble and minerals. In fact the South has practically all of the important minerals in great abundance. In its coal, iron, copper, lead and zinc, bauxite, sulphur, petroleum and gas, salt, lime, Fuller's earth, feldspar, clays it has unlimited chemical development possibilities. A substantial proportion of more than 40 minerals and their immediate products are now supplied by the South and proven deposits of lesser known minerals await development. The chemist has hardly touched the possibilities of the South's coal, salt, oil and gas, cotton, forest and other resources.

In the South alone with its vast raw materials, available power and adequate transportation are potentialities for making America self-contained. That the development of such a program will aid not only industry but the American farmer, James W. Gerard, chairman of the Committee for America Self-Contained, pointed out when he said that of particular interest to the people of the South is the application of science—of chemistry—in aiding America to become economically free from the rest of the world. As it is, more than 95 per cent of our trade is with and among ourselves. Science made us free from foreign sulphur producers many years ago. Science has enabled this country to produce the nitrates which are used by farmers as fertilizer and for explosives, and made us independent of foreign nitrates. In countless other directions the chemist has enabled us to produce at home the things we need. Further development and support of home industries will help to bring about greater activity and create wealth.



## INCREASED CONSUMPTION OF ELECTRICITY

**D**ESPITE greater Government competition and at times seemingly deliberate propaganda to discredit the privately owned electric power industry as a whole, it has withstood the shock of the economic depression better than most industries and was among the first to report increased output.

The consumption of electricity has been increasing since the spring of 1933 and with a better understanding of the Government's attitude as reflected in recent contracts between the Government and privately owned power companies affected by the T.V.A. project, the outlook is more encouraging to management and to millions of stockholders.

Production of electricity for public use in the United States last year increased over the preceding year for the first time since 1929. According to the preliminary report issued by the Geological Survey, the total output in 1933 was 85,164,000,000 kilowatt-hours, a gain of about 2½ per cent over 1932 as compared with a decrease of 9 per cent between 1931 and 1932. Up to the depression, consumption of electricity showed a steady gain reaching a maximum in 1929 of 97,352,000,000 kilowatt-hours. Then started a gradual decrease which continued each year to the low point of 83,153,000,000 kilowatt-hours in 1932. The monthly records indicate that the upward trend in the consumption of electricity was resumed in May, 1933, and continued for the remainder of the year.

Based on the total figures available for the United States, the South with an estimated electrical production of 18,965,000,000 kilowatt-hours, made a gain over 1932, registering the first annual increase since 1929. The electrical output of the South in 1933 is the largest of any year with the exception of 1929-1931 inclusive, and is now 10 per cent more than the total output of the United States in 1910. More than 22 per cent of the electricity produced for public use is now consumed in the South.

About 41 per cent of the country's electrical production is by water power. In the South it is 48 per cent. Production of electricity by water power was about 1 per cent larger than in 1932 for the whole country, and 4 per cent more in the South, indicating that water power plants are still maintaining their position in the production of electricity for public use. Electrical production by water power increased in the South from 8,983,000,000 kilowatt-hours in 1932 to 9,375,000,000 kilowatt-hours in 1933.

The Geological Survey points out that there has been an increase in efficiency in the use of fuels in generating electricity each year since 1919. In 1933 the average consumption of coal and coal equivalents in oil and gas in generating one kilowatt-hour of electricity was 1.47 pounds—.03 of a pound or about half an ounce of coal less per kilowatt-hour than in 1932.

This estimated saving in coal for the industry is equivalent to about 750,000 tons, or probably \$2,250,000 at an average price of \$3 a ton.

Fuel consumption in the generation of 50,641,000,000 kilowatt-hours of electricity for public use in 1933 included 30,581,000 tons of coal, 9,888,000 barrels of oil, and 102,600,000,000 cubic feet of gas. Compared with 1932, there was an increase of 300,000 tons in coal consumption, 1,922,000 barrels of oil and a decrease of 5,275,000,000 cubic feet of gas.

In producing the 9,590,000,000 kilowatt-hours of electricity from fuels, public utility power plants in the South in 1933 consumed approximately 4,615,000 tons of coal, 2,835,000 pounds of oil and 59,383,000,000 cubic feet of gas. While there was an increase in coal consumption compared with 1932, consumption of oil and gas both decreased in the South. The decline in gas consumption was principally in the West South Central States. Gas consumption increased in the South Atlantic States by 153 per cent.

Total capacity of water wheels installed in public utility, municipal and manufacturing plants in the United States, January 1, 1934, was 15,913,000 horsepower. The South has 404 water power plants aggregating 4,716,000 horsepower, or 30 per cent of the country's water power capacity. It has 21 per cent of the steam capacity and 47 per cent of the internal combustion engine capacity in generating plants producing electricity for public use.

The accompanying tables, compiled from the preliminary report of the Geological Survey, show the production of electricity by private and Government owned power plants, output by types of power, fuel consumed, and number and capacity of generating plants in the South and the United States.

### Production of Electricity for Public Use

Year	South Kilowatt-hours	United States Kilowatt-hours
1910 .....	2,350,000,000	17,000,000,000
1925 .....	11,847,000,000	65,870,000,000
1926 .....	13,679,000,000	73,791,000,000
1927 .....	16,329,000,000	80,205,000,000
1928 .....	18,795,000,000	87,851,000,000
1929 .....	21,584,000,000	97,352,000,000
1930 .....	21,083,000,000	95,936,000,000
1931 .....	19,913,000,000	91,729,000,000
1932 .....	18,306,000,000	83,153,000,000
1933 .....	18,965,000,000	85,164,000,000

### Output of Electricity By Fuels and Water Power

	1933	
	South Kilowatt-hours	United States Kilowatt-hours
By use of water power.....	9,375,000,000	34,522,806,000
By use of fuel .....	9,590,000,000	50,641,413,000
Total .....	18,965,000,000	85,164,219,000

### Fuels Consumed in Generating Electricity

	1933	
	South	United States
Coal (tons) .....	4,615,000	30,581,585
Oil (barrels) .....	2,835,000	9,887,988
Gas (cubic feet) .....	59,383,000,000	102,600,649,000

### Plants Generating Electricity for Public Use

	1933	
	South	United States
Number of companies .....	430	1,537
Number of plants .....	1,149	3,813
Total Capacity (kilowatts) .....	8,524,256	36,232,545



# THE CONDITION OF SOUTHERN MANUFACTURING UNDER N.R.A.

**M**Ixed opinions are given as to the benefits the N.R.A. has brought to Southern industry. Activity and employment have increased in many lines but general dissatisfaction is expressed as to the inadequate wage differentials provided under the codes. Some Southern industries do not feel that a wage differential for the South is obtainable. Some have made an effort to secure a justifiable wage differential and have failed.

It is the consensus of opinion of those with an open mind that there must be a proper territorial wage differential if Southern manufacturers are to have the opportunity to fairly compete with industries in other sections of the country. Only by concerted action can Southern industry hope to protect its right and make it possible to continue operation at a fair profit and provide employment for Southern workers. It is a real problem for the South and unless a proper and fair wage differential is secured it is clear that the present higher basic wage rates imposed on the South will make competition impossible.

In discussing this question, L. Sevier, president of the Associated Industries of Alabama, Birmingham, writes:

"If industry is to continue as a going business it can only be expected through its ability to sell its products in the markets of consumption, and then only when its manufacturing and delivery cost does not exceed that of the competitor who may be more favorably received, as labor cost in any manufacturing bears a greater percentage proportion to the total cost than any other element. It must be recognized that a favorable differential labor scale is a necessity, but so far in many codes authorized this fact has been ignored.

"There has been no development in this State's industrial affairs and no material increase in employment that may be considered definite as to time, that would lend encouragement to the thought or feeling that we may look forward to a permanent business recovery at an early date. The slight business recovery during the past 60 days may be credited to the Government's distribution of money through its many agencies and which by its aid to the un-

employed has increased through payrolls the purchasing power—from which the retail trade has benefited. Especially is this true in the agricultural sections where the Government has aided the farmers in meeting past due obligations and assisted in their 1934 financing."

While the general consensus of opinion seems to be that the N. R. A. is helping Florida industry, and that differences now existing are expected to be wiped out, Florida industrial authorities are bitter against wage differentials that penalize the State for its natural favorable living conditions.

A distinct improvement in the lumber business is noted since the adoption of the lumber code, largely due to the elimination of unfair trade practices and excessive overproduction. Both of these serious factors have been tremendously improved under the influence of the N. R. A. regulations. The general feeling is that this has been the main benefit to industry and business throughout the country. While the increase in the wage scale has not been particularly burdensome, the Florida lumber industry is faced with a new problem through the activities of labor unions on the Pacific Coast and the threatened 30-hour regulations.

The naval stores industry is experiencing a definite recovery and substantial increase in prices under the new marketing agreement.

In the Carolinas, the general manufacturing situation has improved, especially in textiles, and there is willingness, as elsewhere in the South, to back the President in his program. C. O. Kuester, business manager of the Charlotte Chamber of Commerce, says that in his section of the State, "the trend of employment is upward in practically every line, a modest increase, nothing to brag about, but the people are more hopeful, and they seem to be less afraid than in the past."

Charlotte and the Piedmont Carolinas, as well as other sections of the South, had the best Christmas business since 1929 and retail trade has been active during the past two months. The N.R.A. has put back to work in Charlotte since last October about 2,000 workers on regular jobs and 2,000 on part-time jobs. While the general manufacturing situa-

tion is more satisfactory, many people are of the opinion that a differential wage scale should apply in the South.

In some sections, N.R.A. codes have benefited some lines and employment has increased in cotton manufacturing especially, while the codes have adversely affected others and reduced employment. On the whole the N.R.A. is receiving the cooperation of industry and the more optimistic believe that the low point of the depression has been definitely passed and conditions will improve as questionable policies and practices are gradually eliminated. The net result has been beneficial—that is to say, industrial production has been increased and unemployment reduced. This has been accomplished in the face of considerable confusion and misunderstanding as between employers and employees by the extraordinary regulations imposed by the codes but the encouraging note is that most of these differences of opinion have been ironed out without resort to force of drastic penalties.

Wendell W. Black, manager of the Jackson (Miss.) Chamber of Commerce, writes:

"There has been a decided upturn in the lumber, fertilizer and glass manufacturing industries within the past few months with the resultant increase in their respective payrolls.

"Manufacturers and fabricators of construction materials have been benefited by the increased demand for their supplies due primarily to Government work, particularly P.W.A. activities.

"There is considerable dissatisfaction in all lines over the inadequate wage differential provided in codes of fair competition for Southern labor. In a great many instances the high minimum rate has caused the replacement of negro common labor with white people on jobs much better suited to negro labor.

"While the increase in employment in this area may be attributed to Government payrolls, there has been a strengthening of confidence in future business caused by the increase in prices obtainable for farm products, particularly cotton. With cotton at its present level there is no question but that all lines of endeavor will feel some benefits and this section of the country will enjoy some measure of prosperity."

Manufacturing in West Virginia has improved somewhat in recent weeks. Labor disturbances in certain industries have produced friction, interrupted operations and reduced employment. Under the codes additional employment has been created. W. S. Rosenheim, managing director of the Huntington (W.

(Continued on page 56)



# TEXTILE MILLS MODERNIZED AND REHABILITATED

By

**C. L. Emerson**

President, Robert And Company,  
Atlanta, Ga.

**U**NDER the new industrial dispensation the bitter price war which raged on all fronts as late as six months ago has somewhat abated. The New Deal has brought us laws governing minimum wages, hours of operation, and restrictions on increase in capacity through the addition of new spindles or looms. About the only truism left from the old manufacturing regime is that the plant with the most modern equipment and most efficiently maintained will have the lowest production cost, therefore, the best chance to show a profit on its operation.

## **Simplify Operating Control**

The basic principle in any scheme for modernization is that full use should be made of existing buildings, thus keeping the investment in brick and mortar to a minimum. Many large plants have the same process carried on in several different locations. There may be two or three entirely independent weave rooms or spinning rooms. Where possible, these should be consolidated. This step simplifies the control of the operation and reduces the supervisory force required.

Another principle to be borne in mind continually is the attainment of a straight flow of material through the plant from one end to the other. The backtracking or crossing of material in process is apt to cause confusion and additional cost for handling.

It is, of course, important to arrange all machinery so as to obtain working alleys of sufficient width, also sufficient spare floor space, and to get the best possible natural light. Where it becomes necessary to convey material by mechanical means, the speed of transfer should be considered. A new high speed elevator, for instance, might profitably replace an old slow speed machine.

The problem of adapting modern machinery arrangements to existing buildings is sometimes a difficult one, and in arranging processes a moderate amount of new construction will often be advantageous in producing a straight flow

of material through the mill. In one case a new picker room aided in the reorganization, in another the addition of a third story to the existing knitting plant permitted the installation of finishing equipment which had been previously housed in an isolated building.

Due consideration should also be given to minor improvements in the buildings themselves. Wooden sash should be replaced with steel sash. In old mills that do not have roof monitors, adequate ventilation can be obtained by the installation of revolving ventilators. In recent years the construction of toilets and washrooms has been greatly improved, and industrial plumbing has made great strides. Many mills should consider remodeling these facilities.

## **Inefficient Machinery a Liability**

Under present business conditions it may be good management to scrap obsolete and inefficient machinery, installing modern, high speed machines. It would be interesting to know how many machines now in operation are really a liability instead of an asset, but are kept going because the owners have never separated the operating costs between the entirely obsolete and comparatively modern units of their equipment. The large increase in the cost of labor has augmented the return to be obtained from modern labor saving machinery.

Since mill profits are made in the weaving, and since the entire object in a weave mill is to produce cloth, it is well to direct attention first to this department. Our consideration of textile machinery will, accordingly, begin at that point.

New types of high speed looms have been placed on the market during the past few years which are 20% more productive than the former types. Code requirements permit the replacement of obsolete or worn out machines with new and modern equipment, but prohibit the installation of additional machines. Under these conditions, taken in conjunction with the definite limitation of production hours, the increase in productive capacity to be obtained from the same number of looms is a subject for serious consideration.

Where new looms are not purchased, the mill should go to an extreme in putting their old looms in the very best operating condition possible. A close study

by an expert on weaving will frequently disclose that a reasonable expenditure for renewals or new attachments will greatly improve the work in this department.

Naturally, it is impossible to get the utmost efficiency out of high speed looms, unless the warp and filling yarn comes to the weave shed in good condition. It is probable that the next major development in textile machinery will be in slashers, but even today scientific control of size and temperatures on existing slashers will help to give a round yarn and one with a regain of seven or eight per cent. Such warps will greatly decrease loom stoppages. Still farther back in the processes, we find that the character of the warps coming to the slashers is greatly improved by the installation of high speed warpers and spoolers. These machines not only produce a more resilient and better yarn, but also materially reduce production costs.

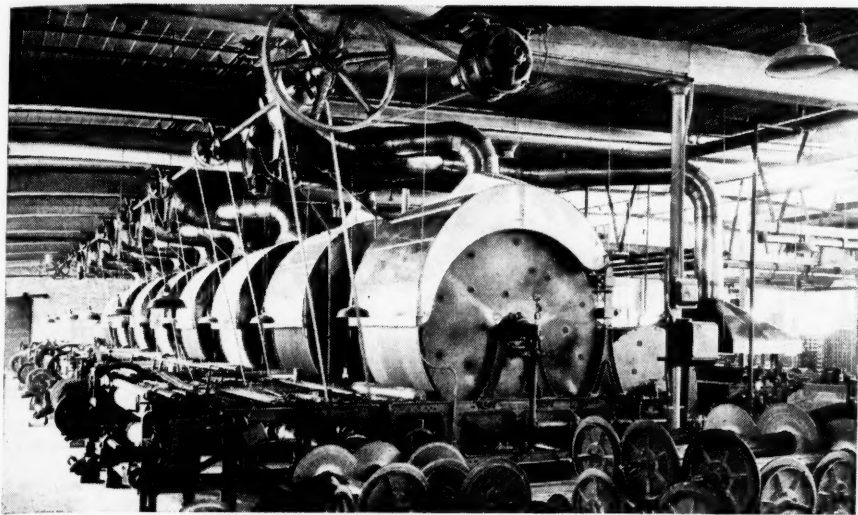
Long draft spinning is most effective in improving the quality of both warp and filling yarn. Long draft has been installed on existing frames to very good advantage. Of course, present day frames have other advantages in addition to long draft, and mills with very old, narrow gauge frames would profit greatly by installing new ones in their place when finances permit.

Some mills have applied long draft to roving equipment, but other than this there is little improvement in this process, so that here it is a question of thorough maintenance rather than replacement. The installation of long draft spinning generally reduces the amount of roving machinery required, so permits the scrapping of the most obsolete machines and a further reduction in manufacturing cost. The installation of one process pickers also produces a reduction in costs. Such reductions rapidly pay for the new machines, even aside from the subsidiary advantage of a better product.

## **Improve Opener Room Methods and Equipment**

Many mills have, in recent years, improved their methods of opening cotton, and those who have lagged behind the procession should at once proceed to put this very necessary foundation beneath their structure of production savings. Several mills have abandoned dust pits and substituted the Rogers system of recirculation in picker and opener rooms. This system permits the maintenance of proper humidity in the picker room and





**New Method to Relieve Condensation in Slasher Room of a Textile Mill**

does away with the principal cause of uneven lap weights.

Some times when expensive textile machinery is installed, due thought is not given to the conditions under which this machinery and its operatives must work. Such things as proper humidity, uniform temperatures, fixed speeds, good ventilation and adequate light can easily make a cumulative difference of 15% in the productivity of the machinery. The management would not for a moment consider paying 15% more for the machinery than a fair market price,

yet they sometimes assume a greater burden by failing to provide proper motor drives, a good humidifier system, automatic temperature control, a modern lighting system, or those building improvements which conduce to greater efficiency in the workers.

The operation of textile mills is becoming more scientific, but there is room for the intelligent use of a good many meters not usually seen in the average mill, for instance, psychrometers, anemometers, tachometers, foot candle meters, and even thermometers. A few hundred dollars invested in such instruments, plus the time of some young college graduate who is willing to work

diligently, will certainly pay dividends.

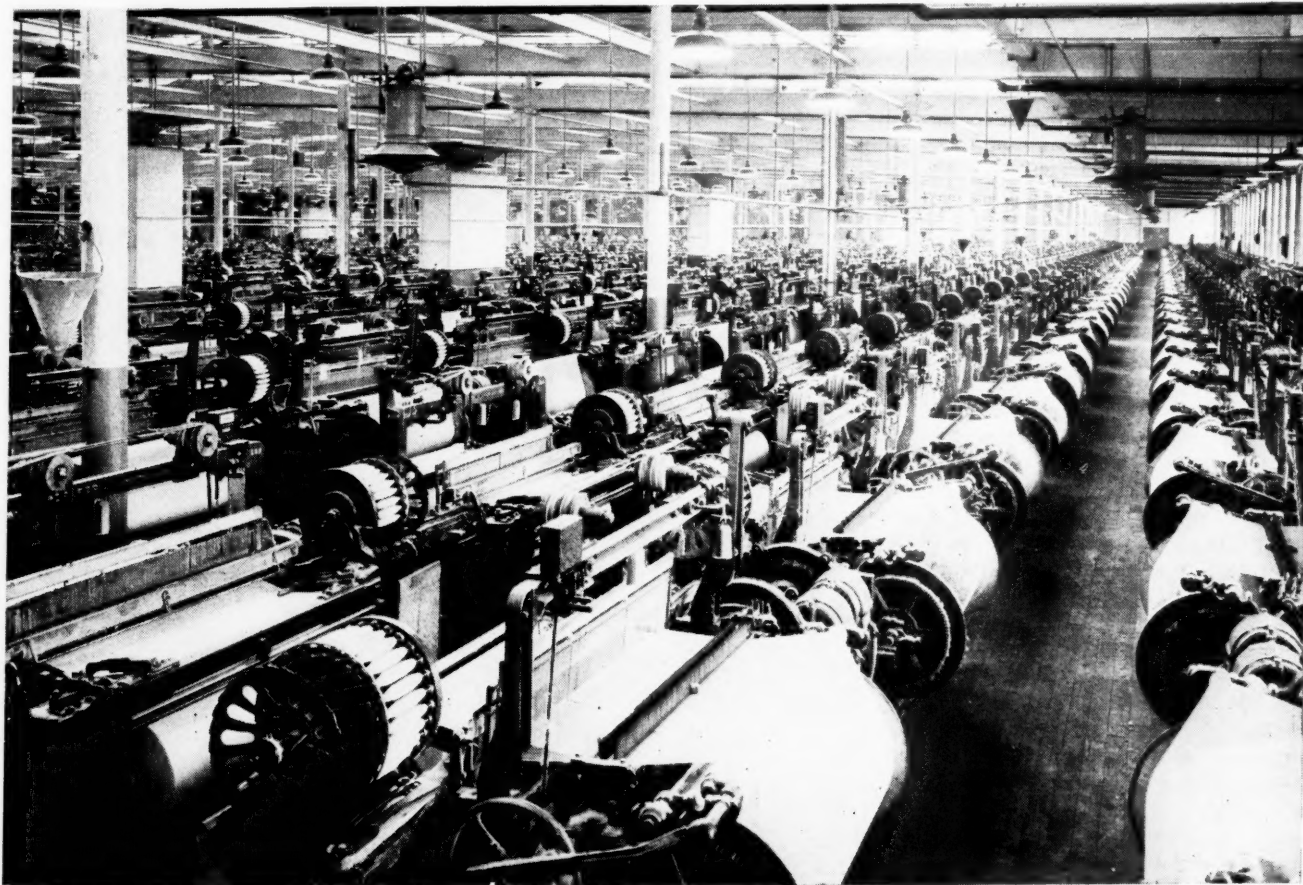
Every mill should set up and maintain a definite schedule of inspection and part replacement on all of its machinery, to the end that repairs may be made before actual breakdowns and stoppages occur. If the management does not have in its own organization a man, or men, competent to do this work, it may, at a small expense, employ part time of organizations who specialize in this specific work.

While mills are running on the shortened production schedules, time is available to study most minutely all the improvements which can be made to reduce manufacturing costs. The calculations and drawings on which such investigations are based cost very little, and even though the improvements decided upon may not be undertaken at once, the management has obtained a clear picture of the defects of the plant and the method and cost of curing them, and such programs can usually be carried out a little at a time as business conditions warrant.

The cumulative effect of these savings in production cost is almost startling. It will, perhaps, be the basis of a new manufacturing program to be utilized to the utmost under the changed competitive factors.

#### **Modern Weave Room**

Draper Model X Looms installed by the Bibb Mfg. Co., in its cotton mill at Columbus, Ga.





# SCIENTIFIC RESEARCH TRIUMPHS

**T**HE practical demonstration made at Thorold, Ontario, as well as that in the Savannah Laboratory, of producing commercially acceptable newsprint from Southern pine, can mean but one thing—National emancipation from foreign sources of newsprint supply. It further must mean that dollars which now leave our country, will stay at home and work for the farmer and laboring man of the South.

From North, East, and West are coming wise men to Savannah that they may see with their own eyes, and in some cases to their dismay, the simple but startling success of Dr. Charles H. Herty. Paper mills now established in Canada realize the menace to their existence. Talk as they may about increases in speed and points of quality, the answer remains the same.

Fortitude and determination seem inherent to Dr. Herty who despite obstacles, and there were many, overcame them all. It would have been comparatively easy, in the boom days of '29 and '30 to secure funds for the building of the Georgia State Forestry Laboratory but even the most skeptical will agree that it was some accomplishment to start out at the depth of the late depression and secure funds and equipment, much of it complimentary. Credit must be given to the Chemical Foundation and its farseeing President, F. P. Garvan, as well as to those builders of equipment who had vision enough to help by supplying their machinery at cost, or at less than cost, and often just with their compliments. And those who designed the layout of the plant should as well not be forgotten.

And now just what has Dr. Herty done which means so much to America and the Southern States? Put into plain language that everyone can understand, he and his staff have done one thing great and vital. They have proven that Southern pine up to a certain age will replace spruce, the present raw material for making newsprint paper. In this completely modern paper mill at Savannah, Georgia, one can see loblolly logs barked, ground, disintegrated, bleached and formed into an acceptable newsprint sheet. It is done at a justified cost much lower than can be reached by Northern mills. The differential we are told is between ten and fifteen dollars a ton in favor of Southern pine. The figures and data are available to those

who seek seriously for actual facts.

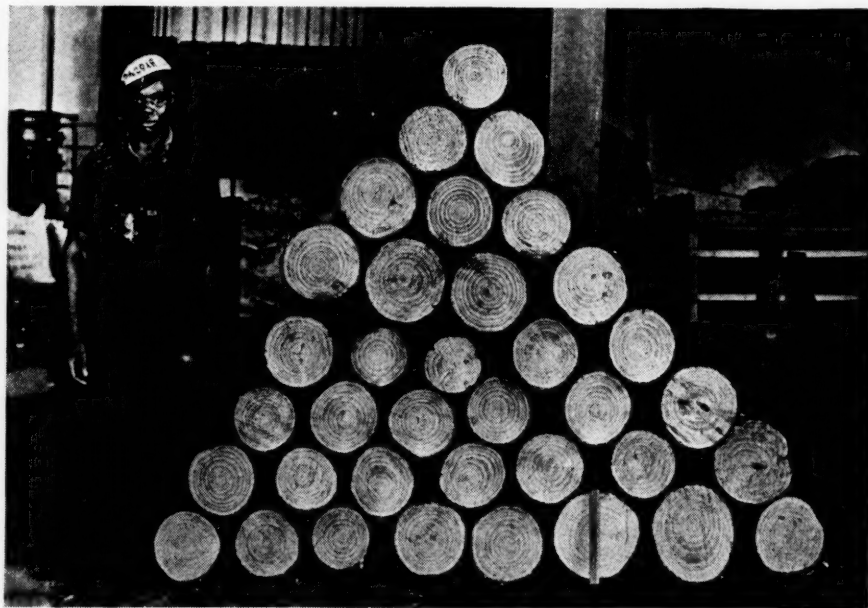
The search for the secret Dr. Herty has pried out of Mother Nature has been constantly carried on in the past, but has up to now been futile. Twenty years ago a very practical chemist spent a vast sum trying by chemical processes to remove what he called the "bloody heart" of Southern pine, only to fail. It could not be removed chemically. It took a Herty to discover the simple method of using the tree before that heart developed.

That the trick had been turned was what the Savannah plant demonstrated. Skeptics said, "Well enough for an experiment, but how about real tonnage at high speeds?" Dr. Herty answered by shipping several carloads of his groundwood and sulphite to Thorold, Ontario, and getting back from a Northern "news" mill, newsprint which he sold to Southern publishers.

What should all this mean to the South? First it justifies President Roosevelt's reforestation program. Then if vision still remains to our Nation it should mean the establishment of mills not only for "news" and "bookpaper" throughout the South but also as a logical step thence to the manufacture of Rayon. It could well mean a sufficient portion of the newsprint now being imported could be made in the South without disturbing newsprint manufacturers

## Loblolly Pine Logs From 10-Year-Old Trees Ready for Making Into Newsprint and White Paper

It is estimated that the South can furnish a perpetual supply of pine pulpwood for the nation's paper requirements.



From the North, East and West, wise men have come to Savannah, Georgia, to see what Dr. Charles H. Herty has accomplished in producing newsprint from Southern pine.

He had the vision to initiate and determination to carry through successfully practical experiments that make it commercially possible to manufacture white paper from Southern pine wood-pulp which may lead, as the next logical step, to the utilization of Southern pine forests as a source of cellulose for Rayon manufacture and other products.

Development of a newsprint paper making industry using Southern pine pulpwood is destined to be the next great manufacturing expansion in the Southern States.

in other States. It has been computed that it could absorb all of the power from Norris Dam, Muscle Shoals hydroelectric plant, thus removing that surplus power now disturbing privately owned power plants. It can mean the employment of many heads of families. It may supply a money crop to the small land owner, and if the policy of decentralization is followed; that policy of building an industry with a view to population, it can before not too long bring happiness to many people.



# THE BLACK ART

By  
J. B. Nealey

It might be truthfully said that the Black Art reduced the world's automobile tire bill by several million dollars. The Black Art referred to is the modern industry of carbon black manufacture. By adding this product to the tread stock in making automobile tires the mileage is thereby increased from 5,000 to approximately 15,000 miles. It is used as a filler and coloring agent in many products. Without carbon black newspapers could not be printed as legibly, quickly or cheaply as they now are. Furthermore, carbon black is one product of which the United States enjoys a world monopoly, and its manufacture is almost wholly a southern industry.

The carbon black industry was fathered in the Pennsylvania gas fields, but as the gas was gradually absorbed by domestic and more profitable industries, it began migrating along about 1900, to the West Virginia fields. Fifteen years later the gas lines to Pittsburgh, Cleveland and other Pennsylvania and Ohio towns, were extended to the West Virginia fields, so that another migration was in order. This time it took a southerly trend, principally to the Monroe field of Louisiana. This migration has been stimulated by heavy taxation and onerous State conservation laws.

It was about this time that the enormous expansion in consumptive demand from the rubber tire industry began and production to meet this came principally from new plants built in the Louisiana and Texas gas fields. In 1930 consumers in St. Louis, New Orleans, Atlanta, and other cities and towns, which are supplied by long lines from the Louisiana fields, took so much gas that the consumption in the carbon black plants shrank materially. This started a real migration to the Texas fields.

The growth of this industry is reflected in the following figures: Production in 1887 was approximately 1,000,000 lbs.; by 1900 it amounted to six or seven



Thermatomic Carbon Co.; Plant at Sterlington, La.

million lbs. and ranged around 20,000,000 lbs. annually by 1915. This was more than doubled in five years, and by 1925 it exceeded 177,000,000 lbs., while in 1930 it totaled almost 380,000,000 lbs., dropping to 242,700,000 lbs. in 1932.

Carbon black is made by allowing a gas flame to deposit soot on a metal surface and then scraping the soot off. Many novel devices, by which this is accomplished mechanically have been developed but the prevailing method today is what is known as the "channel" process.

## Valuable By-Products

More recently there has been developed and put into operation a process for carbon black manufacture on an entirely

different principle. Natural gas is employed but it is "cracked" in a furnace and leaves nitrogen gas as a by-product which will eventually be used in making methanol or methyl alcohol or will be combined with nitrogen to produce ammonia for fertilizer. This process is patented and owned by the Thermatomic Carbon Company and the plant is located near Sterlington, La., in the Monroe gas field.

A part of the hydrogen gas is used, at the present time, as fuel under the steam boilers in the power plant. The gas in the Monroe field is 92% methane, and the gas resulting from the dissociation in the furnaces, and after the carbon black has been extracted, is 85% hydrogen. A thousand cubic feet of this natural gas will produce 2,000 cu. ft. of hydrogen and 10 lbs. of carbon black. This is not a "rabbit from a hat" proposition, for, according to the well known laws of gas, gas expands 100% or two for one when cracked.

The carbon black thus made is of a different quality and peculiarly adapted for use in some of the seven rubber formulas when greater flexibility is required. In the cracking process considerable water is needed for cooling and this is pumped from a bayou two miles away. Fifteen steam pumps are used, three of which pump a thousand gallons a minute, and these pumps are operated, not with steam, but with gas under pressure from the wells.

The rock pressure of the gas at this point is 750 lbs. and this is reduced at

(Continued on page 56)

**Valuable By-Products  
Now Obtained Through  
New Process of Manufacturing Carbon  
Black From Natural  
Gas. Carbon Black  
Production Is Centered  
in the South. Of 50  
Plants Operating in  
1932, Louisiana Had  
20, Oklahoma 1, Texas  
28 and Wyoming 1.  
The Output of 242,-  
700,000 Pounds Was  
Valued at \$6,664,000**



# LOUISIANA'S NEWEST SULPHUR PLANT

**T**HE \$3,000,000 plant of the Freeport Sulphur Company at Grand Ecaille in Plaquemines Parish, about 50 miles below New Orleans, made its first shipment of sulphur last week. Twenty-five hundred tons of sulphur were loaded for Liverpool at the company's new 1000-foot terminal at the new town of Grandepont, La.

Aside from being one of the major industrial projects undertaken in the South recently, it involved many unusual problems of engineering and construction. Owing to the terrain conditions, the construction work included the building of canals for transportation of equipment and materials, the use of piles for all foundations, and the filling of the caprock area to facilitate drilling and other operations. All prospect drilling, moreover, was carried on with specially designed floating equipment.

At Grandepont, where ocean shipping facilities and a water pumping plant have been built, a complete town is in course of development. Seventy-six frame residences, with asbestos shingle roofs and complete with electric wiring and plumbing facilities, are to be erected on creosoted pile foundations. Stores, churches and other necessary structures will be erected, and a playground and park developed.

The salt dome on which the develop-

ment has been undertaken was discovered in 1928 by means of the seismograph. Subsequent drilling for oil by former owners of the property and further work by geophysicists determined its depth and area. Drilling revealed extensive sulphur deposits. Early prospecting proved costly and hazardous, for while the dome is within 10 miles of the Mississippi River it was necessary to transport materials 70 miles through canals and shallow bayous and lakes.

Initially, large wooden mats were used to support the drilling outfit. The derrick was mounted on piles, power being furnished by a specialty designed mobile Diesel-electric plant installed on a barge. But this, of course, necessitated dredging canals to the drilling sites.

Prospecting of the dome for sulphur began in April, 1932. An elaborate fleet of floating equipment—known as the sulphur navy—made possible drilling and sampling 18 wells within a year. A U-shaped barge, 36 by 80 feet, upon which was mounted a 96-foot steel derrick, together with a 100-horsepower engine for the drawworks, a 50-horsepower engine for the slush pump, an electric lighting unit, blowers, water pump and the necessary tools for the drilling rig, proved highly satisfactory. An opening about four feet wide from the bow to the center of the barge permitted moving on or off a well after the casing had been set. Four 36-foot spuds, made of heavy steel pipe, placed at each corner of the barge, served to hold it in position.

While prospecting was under way the engineering department of the Company went forward with the preparation of plans for the plant. J. F. Coleman

The South Has Been Supplying Practically All of the Sulphur Produced in the United States. In 1933, 1,406,000 Tons Were Mined and 1,637,000 Tons Shipped Which Were Valued at \$29,500,000.

In 1932 Louisiana Again Became a Producer of Sulphur, and in 1933 Its Output of 321,492 Tons Was About 23 Per Cent of the Country's Total.

Engineering Company, of New Orleans, and the J. G. White Engineering Corporation, of New York, acted as consulting engineers in the preparation of preliminary plans and in supervising construction.

A site on the Mississippi River, accessible by both railway and highway, was acquired as a base for receiving and handling materials. Subsequently, facilities have been set up there for shipping sulphur and the town of Grandepont, as previously referred to, is under development. To provide for transporting materials and equipment to Grand Ecaille, a canal 10 miles long, 100 feet wide, with a depth of 9 feet, was dredged. Material thrown to one side provides a base for a highway.

Exhaustive tests indicated that it would be necessary to support all building and structures on piles, relying solely on the friction of the soil and

## Freeport Sulphur Co.

Plant and Shops at Grandepont, La.







Laying Piping at Grande Ecaille, La.

the piles to sustain the loads. Accordingly, 75-foot piles were selected as the proper length. Concrete mats, designed to distribute the load uniformly, were made sufficiently strong to provide for any variations in the supporting power of the individual piles, as well as to take care of additional loading in the future. In the building of the boiler plant foundation 3500 untreated piles, 75 feet long, were driven on about 2½-foot centers to provide a safe bearing strength of about 8 tons each. Total requirements for piling run to about 18,000, of from 40 to 80 feet long.

In constructing the plant, the piling was cut off at elevation plus 2.5 feet, a 3-foot concrete mat being poured upon the piles. The plant floor was elevated to plus 12 feet, being supported by columns and beams from the concrete mat, the space between the floor and the mat being utilized for storing fresh water. The high elevation of the floors was decided upon to preclude inundation during severe storms. The structural steel frames and side walls are designed to withstand a maximum wind velocity of 125 m.p.h.

The site of the plant buildings is about 4000 feet from the mining area, the sulphur storage vat being at the midway point. The three areas have been filled to an elevation of 8 to 12 feet, being joined by a fill and piling bents supporting a highway and pipelines. These fills involve the dredging of about 2,000,000 cubic yards of material which, together with the canal dredging, meant the excavation of over 4,000,000 cubic yards of material. In digging the canal the excavating material was placed to one side, the fill providing for a highway right-of-way.

In sulphur mining by the Frasch system large quantities of fresh water and fuel are utilized. An earthen reservoir at Grandepont, with a capacity of 50,000,000 gallons, provides for settling water taken from the Mississippi River. An intake station pumps water from the

river to the reservoir, and a like unit delivers water to the power plant through two 14-inch welded steel lines. The water is treated for removal of scaling and corrosive properties, and after being heated to about 350 degrees F. is pumped through pipelines to wells in the mining area.

Oil is being used initially as fuel, but the boiler plant is equipped to burn gas, coal or petroleum coke. At the river terminal fuel oil is unloaded by tanker into three 55,000-bbl. tanks, from which it is conveyed, as needed, in barges to the plant.

Erection of the plant necessitated the use of 9000 cubic yards of concrete, 1200 tons of structural steel, 1,000,000 lineal feet of piling, 1500 tons of plant equipment, 2000 tons of pipe, and provided work for about 400 men over a period of one year.

The boiler plant installation comprises six 860-horsepower water tube boilers. Power for drilling wells, operating pump motors, loading sulphur and for all other operations incidental to the production of sulphur, is furnished by three 750-kilowatt turbo generators. For pumping the wells three high-pressure air compressors furnish air.

The liquid sulphur is pumped to the vat site where it is allowed to solidify. It is blasted and loaded by electric

power shoals onto a belt conveyor, discharging into barges. The barges are towed to Grandepont and unloaded by an electric crane, and placed either in storage or onto an overhead belt conveyor discharging into barges for river shipment, or into vessels for export, docking facilities providing for vessels for up to 35-foot draft.

## Contractors and Equipment Firms for the Freeport Sulphur Plant in Louisiana

### CONTRACTORS

**Canals, Reservoirs, Fills**—McWilliams Dredging Company, New Orleans, La.

**Piling—Building Foundations, Pipe Supports and Timber Work**—L. F. Alexander & Company, and John Reese, New Orleans, La.

**Concrete Foundations and Substructures**—Doullut & Ewin, New Orleans, La.

**Steel—Storage Tanks**—Chicago Bridge & Iron Co., Houston, Texas, and Ingalls Iron Works, Birmingham, Ala.

**Steel—Building Superstructures**—Ingalls Iron Works, Birmingham, Ala.

**Siding, Roofing, and Insulation**—Johns-Manville Corporation, New Orleans, La.

**Sash and Doors**—Detroit Steel Products Co., Dallas Texas.

**Boilers and Settings**—A. M. Lockett & Company, New Orleans, La.

**Bleed Water Treating Towers**—Marley Company, Kansas City, Mo.

**Electric Dredge, 12-inch**—Arthur Duvie's Sons, New Orleans, La.

### EQUIPMENT

**Boilers**—Babcock & Wilcox Co., Barberton, Ohio.

**Furnaces**—Dietrich & LaCade Christy Co., St. Louis, Mo.

**Generators and Switchboards**—General Electric Company, Schenectady, N. Y.

**Small Turbines**—Terry Steam Turbine Co., Hartford, Conn.

**Pumps**—Allis-Chalmers Manufacturing Co., Milwaukee, and Ingersoll Rand Co., New York.

**Compressors**—Ingersoll-Rand Co., New York.

**Induced Draft Fans**—American Blower Company, Detroit, Mich.

**Heaters**—Babcock & Wilcox Co., New York.

**Water Treating System**—Cockrane Corporation, Philadelphia, Pa.

**Valves**—Chapman Valve Co., Indian Orchard, Mass.

**Welding Fittings and Piping**—Taylor Forge & Pipe Co., Chicago, Ill.

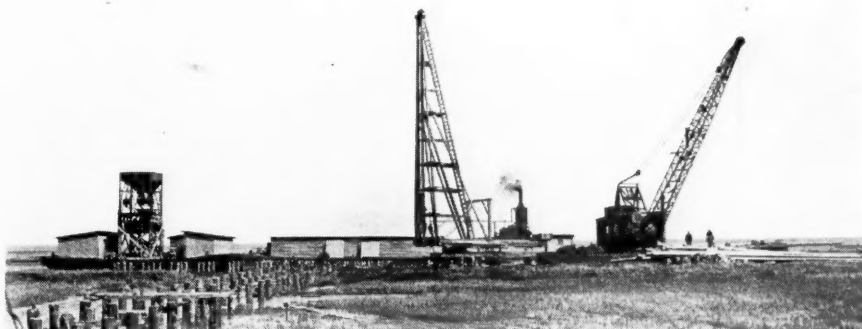
**Conveyors**—Stephens-Adamson Mfg. Co., Aurora, Ill.

**Bridge Crane**—Harnischfeger Sales Corp., Milwaukee, Wis.

**Dredging Equipment**—Equitable Equipment Co., New Orleans, La.

**Drilling Equipment**—Emsco Derrick & Equipment Co., Houston, Texas.

### Constructing Foundations for New Plant





# CROP REDUCTION CRITICIZED

**W**HILE American cotton growers are contracting to reduce this year's cotton crop by 15,000,000 acres in order to limit production to 9,000,000 bales, many persons are questioning the wisdom of continuing a policy of restriction when foreign countries are increasing acreage and production of cotton. Both request for and sales of cotton ginning machinery to foreign countries have been larger in the past two months than in any similar period.

This subject was discussed in the February MANUFACTURERS RECORD. Further facts relative to the crop reduction program are given in the subjoined letters—one presenting the opinion of a Southern manufacturer and one from a Southern farmer who writes that under the tobacco reduction policy he is prohibited from growing tobacco.

The Southern business man, the executive of a manufacturing organization with factories and branch offices in many parts of the South, writes:

"We realize that the MANUFACTURERS RECORD, with its great influence in the South and in no way directly connected with cotton-growing, might be able to render the South very valuable service in bringing out all of the facts relative to the plan of cotton reduction and its consequences.

"To us, it looks as though the Southern farmers, as well as others connected with the farmers, are willing to sell their birthright for a 'mess of pottage', not realizing the effect on future years or fully understanding the situation.

"The plan of the cotton processing tax—taxing the entire country \$130,000,000 to be given to the farmers—is certainly fine for the South as long as the country is willing to pay this tax.

"However, we feel the policy adopted—limiting the production of cotton—will eventually work a great hardship on or ruin the entire South and also affect the entire country.

"We only produced 53 per cent of the world crop last year. No price has ever been or will be controlled by an individual, corporation or country, producing 53 per cent of the commodity. England controlled about 90 per cent of the rubber production when attempts were made to control the price of rubber and in five years' time the rubber production was so increased that the market was destroyed and the plan abandoned after

all participants had lost heavily. We do not see how we can prevent having a similar experience with cotton.

"Foreign countries have increased or are preparing to increase their crop, and if the American crop for 1934 is limited to 9,000,000 bales, foreign countries will increase their production at least one and one-half to two-million bales and this increase will have an effect on our market for years to come. When foreign countries have purchased machinery and made arrangements to produce and handle cotton, their efforts will continue, regardless of the price of cotton, and they have cheaper labor with which to produce their cotton than we have.

"Some American manufacturers had more inquiries for cotton ginning machinery from foreign countries in the last two months than they have ever had in any similar two months in our history, indicating that they are planning to offset the decrease of cotton-growing in this country. Actual gin machinery sales to foreign countries have been more in the last two months than in any similar period in the past, showing conclusively that foreign countries are expecting to take advantage of the increase in price which our present policy will bring.

"There is no question but that the farmer has needed help, like practically everyone else in this country. The MANUFACTURERS RECORD and every agricultural publication for years has advocated the diversification of crops. Any farmer who raised his own food crops can never be badly hurt, regardless of price obtained for his principal cash crop.

"If we are going to tax the public \$130,000,000 to give to the cotton farmer, why not give this to farmers who can make affidavit and prove that they have raised sufficient food stuff to take care of themselves and their tenants for the next year and then let them raise all the cotton or any crop that they desire to raise, without any regard to the amount to be raised.

"If cotton should go to 3 cents per pound, and with our present gold standard this could not happen, the farmer would still receive \$5 to \$8 per bale from the Government processing tax on every bale of cotton raised. This fund would pay for his clothes, machinery and taxes, and he would be in better shape than nearly anyone in the country, and if we raised 18,000,000 or 20,000,000 bales of cotton we would continue to hold the world market on cot-

ton, rather than lose the market.

"The limited crop, as planned, will throw between 200,000 and 300,000 people out of work, as the warehouses, compresses, railroads, cotton merchants, oil mills, cotton ginner and cotton gin manufacturers will all have to let off a large number of men. It does not seem wise to tax the public \$130,000,000 to hand to the cotton farmers to throw 200,000 to 300,000 people out of work. The same money, if expended or given to farmers who can and will raise sufficient food crops to take care of themselves and their tenants to increase production rather than decrease it, putting people to work instead of throwing them out of work, seems to us to be a far better sane plan.

"To sum up the situation, why not pay the processing tax for efficiency, increasing employment, increasing the use of cotton, holding our supremacy in the world's market and our balance of trade, rather than pay the processing tax for inefficiency, stopping work, increasing unemployment, decreasing the use of cotton, losing our world supremacy and balance of trade?

"This would also apply to wheat as well as to cotton."

The following letter from a Southern farmer gives another view of the crop curtailment program as it affects a tobacco grower:

"For the past six years the farmers have been advised to plant less cotton and less tobacco and grow more food and feed for home use. I did that, and taxes went up and up and I made no money. Today I am behind in my taxes and lack money to buy bodily needs.

The Government now comes to me and says that I shall not be allowed to plant nor sell tobacco—why? It is because I have not planted any for the past three years. But those who continued to plant it are permitted to go on with a 30 per cent cut in acreage. This move of the Government has robbed me of my tenants. They go where they can plant tobacco and my land remains uncultivated and the tax eating it up.

"I kept off the market because so advised by our leaders, and now the Government has cut me off completely.

"Many farmers are allowed to plant hundreds of acres while the little farmers such as I are to perish under the Government ruling. I have begged for a small acreage, but I am denied a single foot because I did not plant in each of the years 1931-32-33.

"I believe in cooperation with justice and honesty. I do not believe in a policy that favors some and denies equal opportunities and privileges to all."



# CARNEGIE RIVER SERVICE MAKES 100TH VOYAGE

**S**TARTING December 19, 1922, the Carnegie River Service of the Carnegie Steel Company, Pittsburgh, has completed 100 voyages from Pittsburgh to the Gulf of Mexico. Approximately 750,000 tons of rolled steel have been delivered to customers in the South and Southwest territory, the major portion of which was hauled to final destination by the railroads. On January 25, 1934, voyage number 100 began its 2,000 mile trip down the Monongahela, Ohio and Mississippi Rivers to New Orleans. The tow consisted of 11 barges carrying approximately 8,000 tons of rolled steel products for Southern delivery.

large quantities from the mines to this plant being of first importance.

In 1922 this service was extended to cover the movement of finished products not only of Carnegie, but of other Corporation subsidiary interests located in the Pittsburgh district, from Pittsburgh to the Southern and Southwestern markets. Larger towboats as well as larger and covered barges were added to existing equipment to provide adequate facilities both for downstream movement of certain products used in the various plants of the company.

Up to 1929 sailings were more or less dependent upon the stage of water, but with the completion in 1929 of the United States Government canalization program of the Ohio River the regular

Warehouse of the Carnegie Steel Company is located.

This Warehouse is ideally located to receive shipments either by rail or water. Located immediately on the Houston Ship Channel, deep sea craft drawing up to 30 feet of water may load or unload at the warehouse dock. The dock is 300 feet long and is equipped with an electric locomotive crane. Connections to all trunk lines entering Houston expedite the handling of rail shipments. The barge ship is dredged to a depth of 10 feet. Over this operate three high-speed traveling cranes, arranged for transferring materials from barges directly onto the warehouse floor or railroad cars. These facilities enable the warehouse to receive consignments direct from the mills by water with but one handling.

Barge Number	Customer	Net Tons Product	Barge Destination	Final Destination
1	American Steel & Wire Co.	800 Wire	New Orleans, La.	Houston, Tex.
2	American Steel & Wire Co.	800 Wire	New Orleans, La.	Houston, Tex.
3	American Steel & Wire Co.	600 Wire	Memphis, Tenn.	Memphis, Tenn.
4	American Can Company	450 Tin Plate	New Orleans, La.	New Orleans, La.
5	National Tube Company	800 Pipe	Memphis, Tenn.	Memphis, Tenn.
6	National Tube Company	800 Pipe	Memphis, Tenn.	Memphis, Tenn.
7	American Bridge Company	700 Fab. Steel	New Orleans, La.	New Orleans, La.
8	American Bridge Company	700 Fab. Steel	New Orleans, La.	New Orleans, La.
9	American Bridge Company	700 Fab. Steel	New Orleans, La.	New Orleans, La.
10	American Bridge Company	700 Fab. Steel	New Orleans, La.	New Orleans, La.
11	American Bridge Company	700 Fab. Steel	New Orleans, La.	New Orleans, La.

In telling of the history of the development of the Carnegie River Service, the company has issued a handsome illustrated booklet which describes and lists the type and capacity of barges and towing equipment. The river transportation service of the Carnegie Steel Company came into existence about 17 years ago, primarily to serve the by-product coke plant then under construction at Clairton, Pa., the prompt, regular and economical movement of coal in

movement of tows throughout the entire year became possible. Another development, almost completed, is the Intracoastal Canal from Plaquemine Lock on the Mississippi River near Baton Rouge, La., to Galveston, Tex. This important work should be completed prior to July 1, 1934, and will make possible the direct movement of barges from Pittsburgh to Galveston and thence by the Houston Ship Channel to Houston, Tex., where the Texas

**SEE "Interesting Facts"**

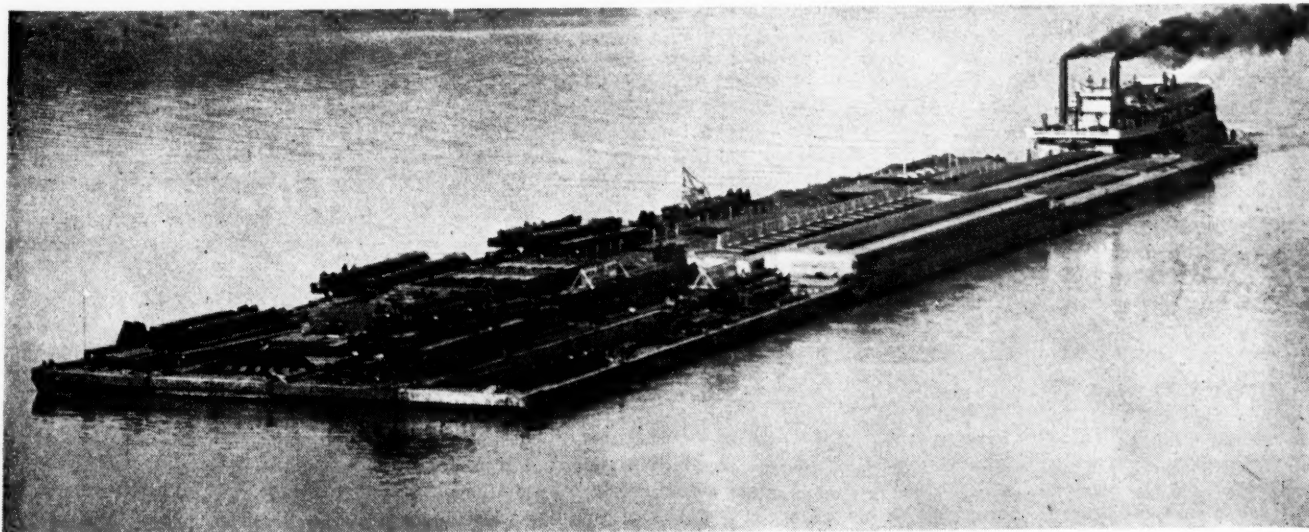
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## Code Authority Meeting

The tenth annual meeting of the Concrete Reinforcing Steel Institute, as the Code Authority for the Reinforcing Materials Fabricating Industry, will be held at the Edgewater Beach Hotel, Chicago, Ill., March 14-15. Problems in connection with the Code of Fair Competition and its administration will be discussed. R. W. Johnson, 333 North Michigan Boulevard, Chicago, is secretary.

## The 100th Voyage From Pittsburgh to Gulf Ports

Eleven barges with 7,750 tons of steel products passing Wheeling, W. Va.





# \$45,488,000 IN CONSTRUCTION CONTRACTS

Southern Construction Activity for February, 1934

**N**EW construction awards in the South for the first two months of this year more than doubled the amount reported for the corresponding months of 1933. February awards of \$45,488,000 for building and engineering projects in the 16 Southern States are announced by the MANUFACTURERS RECORD DAILY CONSTRUCTION BULLETIN. While this represents a decrease of 6 per cent compared with the January total of \$48,870,000, the combined valuation for the two months is \$94,358,000 as compared with \$46,862,000 for January and February, 1933. If this monthly average, unusually high for this season of the year, is maintained, approximately \$550,000,000 will be expended in the South for construction in 1934.

The February total exceeds by more than 66 per cent the valuation of awards in February, 1933, amounting to \$27,390,000. Awards in January were 37 per cent higher than in December and exceeded by 155 per cent the total valuation of contracts let during January, 1933.

Contracts to be awarded, regarding which preliminary announcements were made by the MANUFACTURERS RECORD DAILY CONSTRUCTION BULLETIN during February, aggregated \$72,650,000, bringing the two-month total of projected construction to \$193,133,000, definitely presaging heavy awards in the next few months. Together with work under way on major public and privately financed projects carried over from 1933, and that to be initiated shortly on jobs placed under contract to March 1, employment will be provided for many building tradesmen in the South, and factory payrolls in widely scattered sections of the country will be expanded as building materials, contractors' plant equipment, and manufacturing machinery are turned out for varied Southern enterprises.

Considering the amount of money involved, road, street and paving awards during February hold first place among the major classifications, amounting to \$20,040,000, compared with \$19,941,000 in January, and bringing the two-month total to \$39,981,000, representing a gain of 138 per cent over awards in the corresponding period of the preceding year. The figures assume added significance when it is considered that at this season of the year construction normally

## General Building

	Contracts Awarded	Contracts to be Awarded
Apartment and Hotels.....	\$158,000	\$95,000
Association and Fraternal.....	60,000	105,000
Bank and Office.....	50,000	40,000
Churches .....	136,000	147,000
Dwellings .....	1,200,000	2,534,000
Stores .....	407,000	425,000
	<b>\$2,011,000</b>	<b>\$3,346,000</b>

## Public Buildings

City, County, Government and State.....	\$10,993,000	\$8,255,000
Schools .....	3,502,000	5,948,000
	<b>\$14,495,000</b>	<b>\$14,203,000</b>

Roads, Streets and Paving..... \$20,040,000 \$6,051,000

## Industrial and Engineering Projects

Dredging .....	\$60,000	\$5,708,000
Filling Stations, Garages, etc.....	55,000	238,000
Industrial Plants .....	4,465,000	28,217,000
Levees, Revetments, Dikes, etc.....	3,007,000	831,000
Sewers, Drainage and Waterworks.....	1,355,000	14,056,000
	<b>\$8,942,000</b>	<b>\$49,050,000</b>
<b>Total .....</b>	<b>\$45,488,000</b>	<b>\$72,650,000</b>

lags and that highway contracts in the closing months of 1933 set new high marks. The speeding-up of highway awards is in keeping with the desire of the U. S. Bureau of Public Roads to put under contract as quickly as practicable all of the available \$400,000,000 emergency Federal highway fund. To March 1 contracts had been awarded involving 75 per cent of the sum available.

Realizing that road funds are being exhausted, road builders and engineers look to Congress for an additional emergency appropriation, or for passage of an act providing at least \$125,000,000 annually for the next two years, beginning July 1.

Contracts were let for several major bridges last month, and bids were advertised for river crossings to cost up to \$7,000,000 each. Besides, a large number of timber, reinforced concrete or steel bridges, costing from \$50,000 to \$200,000 each, were let to contract, put under way or projected.

In two months this year contracts let for public buildings amounted to \$26,888,000, totals for January and February being \$12,393,000 and \$14,495,000, respectively. As awards for this class of buildings amounted to but \$14,145,000 in the corresponding period of last year, the 1934 figure represents a gain of 90 per cent.

A feature of Southern building activity was the letting of school building contracts last month totaling \$3,502,000, as compared with school building awards

of \$1,222,000, in January, 1934. Judging from the volume of work of this character now in the "planned" stage, lettings will continue to be heavy for some months to come. Programs in Southern towns and cities are being financed with PWA funds and with bond issues recently voted.

Contracts let for industrial and engineering projects totaled \$22,927,000 in January and February, amounting to \$13,985,000 and \$8,942,000, respectively. Compared with similar awards in the corresponding period of 1933, the 1934 total represents a gain of more than 70 per cent.

That nationally known firms are looking ahead to better business is indicated by the announcement that the DuPont Rayon Company will immediately undertake erection of a \$5,000,000 viscose rayon unit at its Amthill, Richmond, Va., plant. Reports are current, too, that the company will invest \$3,000,000 in expanding its Waynesboro, Va., plant. The Celanese Corporation of America last month awarded contracts for a group of new buildings at its rayon plant at Cumberland, Md.

Breweries and distilleries figure prominently in industrial expansion programs. Oil refining companies continue to invest in new plants and costly modernization work at established refineries. Oil and gas pipe lines are being built, bulk storage and distributing stations established, and groups of filling stations erected.



# The telephone on your customer's desk is a permanent salesman for you...

EVERY minute of every business day you have a direct path to the ear of almost any customer or prospect. You can gain his attention within two minutes\* of the time you take up the telephone . . . and hold it until your sales talk is concluded.

Are you employing *your* telephone to best advantage? Here are some typical results obtained by concerns using Long Distance on an organized basis.

Between frequent trips into the field, an executive of The Brown Company, paper manufacturer, telephones customers from his Chicago office. In one typical period, he made 12 Long Distance calls at a cost of \$25, and sold 1000 tons of pulp valued at \$75,000. "While the groundwork of these sales had been laid by personal contacts," he said, "the telephone enabled me to complete them at the exact moment the customers were ready to buy."

Recently, a man from South Dakota walked into the office of the district manager of the Chicago Pneumatic Tool Company to discuss the possible purchase of a Diesel engine.

The deal was not concluded during the interview, and the district manager asked the customer to telephone "collect" from his home when he



had reached a decision, even if that decision were unfavorable. A few days later the customer did so, saying he had decided not to buy the engine. However, because of the opportunity which the telephone gave to talk things over, the district manager was able to satisfy the customer's objections and complete the transaction. Result: a \$4500 sale which otherwise would have been lost.

Scarcely a day passes that we don't hear of similar interesting results.

Won't you allow us to see if *your* company can't benefit in the same way? Just call the nearest office of your local Bell Company. No obligation.

## TYPICAL STATION-TO-STATION RATES

From	To	Daytime	7:00 p.m.	8:30 p.m.
Chicago	Milwaukee	\$ .50	\$ .40	\$ .35
Cleveland	Buffalo	.95	.85	.55
New York	Washington, D.C.	1.05	.90	.60
Atlanta	Miami	2.55	2.10	1.40

\* The average time required to reach the distant telephone on all out-of-town calls in the United States last year was 1.5 minutes.



# IRON, STEEL AND METAL MARKET

**T**HE operating rate in the steel industry mounted steadily during February, until in the closing week of last month it approached 48 per cent of capacity. March opened with conditions still on the up-grade with no signs of immediate recession in sight.

Qualified observers are cheered by the outlook, since the usual barometers of the industry point to continued improvement. Recent gains have not been of a spectacular nature or of a sort that might suggest an impending reaction. The improvement has largely been accomplished as a result of broad scale buying, rather than the result of heavy releases by any particular group of purchasers. Steel makers are led to anticipate a further upward trend because of contemplated heavy purchases of rails and accessories and materials for rolling stock. An inflow of structural steel orders, reinforcing steel, etc., for construction and building projects, is looked for with improved weather conditions.

## Increased Automobile Orders Stimulate Steel Buying

A substantial accumulation of orders for automobiles resulted in a wave of buying last month. Numerous sheet and strip mills booked sufficient orders to insure operation through March; output in several districts has been lifted to capacity. Some observers point out that buying of steel by the automotive industry has not reached a peak, pointing out that manufacturers have been working with raw material purchased last year. Some say these stocks ran to as much as 600,000 tons. Therefore, it is held that when the stock on hand is depleted automobile makers will buy on a larger scale than so far this year.

## Steel Scrap in Demand

Steel scrap purchases directly reflect the improved operating rate in the steel industry. Not only is domestic buying heavy, but as a result of the favorable exchange situation many foreign companies are purchasing scrap metals, which are being shipped from Atlantic and Gulf ports. As a result, scrap prices continue to advance.

Under normal conditions, it is pointed out, steel mills would have taken advantage of the comparatively low scrap prices which have prevailed, but have preferred to do business on a "hand to mouth" basis, and thus financially be in a strong cash position, rather than to tie up money in inventory. This condition has necessitated speeding up operations at junking and salvaging plants and ship breaking establishments in many parts of the country to satisfy the demand for scrap metal. Most of these concerns, too, sensing the steel industry's methods, have not accumulated any appreciable stocks, and are shipping almost as fast as the raw material is produced filling current orders. It is declared that, coupled with the heavy foreign buying movement, an actual shortage of some grades of scrap impends when the industry's operating rate approaches 60 per cent.

Tinplate mills report an influx of orders from can makers 30 to 45 days before the normal buying period. The carriers last month placed orders for rails, tieplates, fastenings, steel ties, plates, shapes and bars, wheels and axles and airbrakes. Structural awards, which have been running around 14,000 tons weekly, mounted to nearly 24,000 tons in the closing week of February.

## Pig Iron Output Up

During last month the daily production of pig iron increased more than 15 per cent. The average daily production of about 45,400 tons, was said to be the largest since September, when the figure was 50,200 tons. Production in February exceeded 1,200,000 tons, or nearly 4 per cent above the January output. At the close of last month there were four more active blast furnaces than at the beginning of the month.

The steel industry enjoyed a most favorable beginning this year with the daily steel ingot output, 74,000 tons—which while only 1.6 per cent above December, was 85 per cent greater than in January, 1933. Total production for January, 1934, was 1,996,000 tons, representing an operating rate of 34.13 per cent.

Final figures released by the American Iron and Steel Institute covering steel

ingot production for 1933, show production was 22,878,000 tons, representing an operating rate of 33.95 per cent. January bookings for steel construction, the Institute reports, were only 4 per cent less than the amount of business booked in January a year ago.

## Southern Plants at 52 Per Cent Capacity

With the rolling of rail under way at the Ensley works of the Tennessee, Coal, Iron & Railroad Company, and with five open hearth furnaces producing steel ingots, the steel-making pace at the beginning of March in the Southern territory, including Fairfield, Ensley and Gadsden, was at about 52 per cent of capacity. The Southern Railway System purchased 10,000 tons of rail from the Tennessee Coal, Iron & Railroad Company. Delivery of the order scheduled within 90 days, so that rolling will not commence immediately.

Seaboard Air Line Railway receivers have been authorized to purchase rails and accessories for 120 miles of road, estimated to cost \$1,000,000.

A cargo of 6100 tons of manganese ore from Bona, North Africa, was delivered last month to the Tennessee Coal, Iron & Railroad Co., being brought to Mobile by a British freighter, and then up the Warrior River by barges, to be used in the manufacture of steel rail.

Improvement in the cast iron pipe trade is looked for by W. E. Clow, of Chicago, president of the James B. Clow & Son, who operate three pipe plants—two in Ohio and one in Birmingham. Mr. Clow, who recently inspected the National Cast Iron Pipe Company at Birmingham, bases his statement on the delays occasioned on public works projects because of extremely cold weather, and because of the numerous projects proposed that will require pipe.

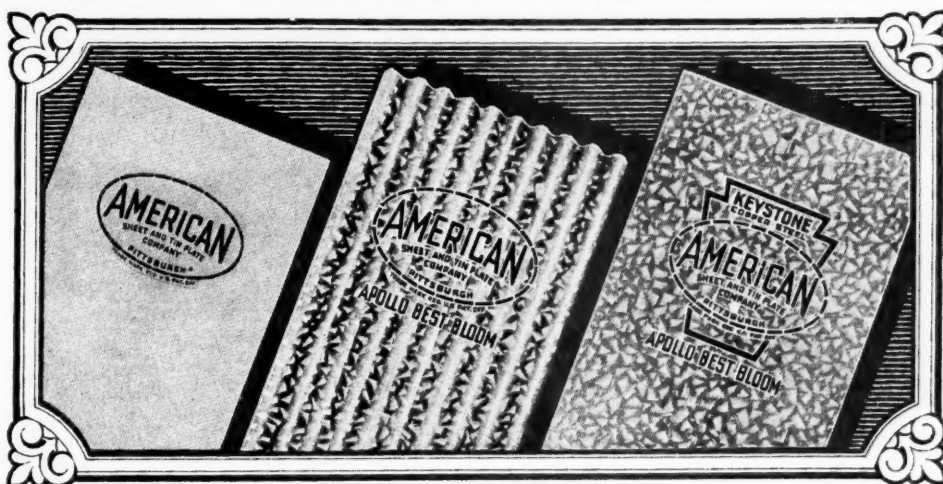
Sales of sheet steel among the independent manufacturers far exceeded production for shipment during January, statistics compiled by the National Association of Flat Rolled Steel Manufacturers, reveal. Sales were at the rate of 54.5 per cent of capacity, as compared with 50.4 per cent for production, and 40.3 per cent for shipments.



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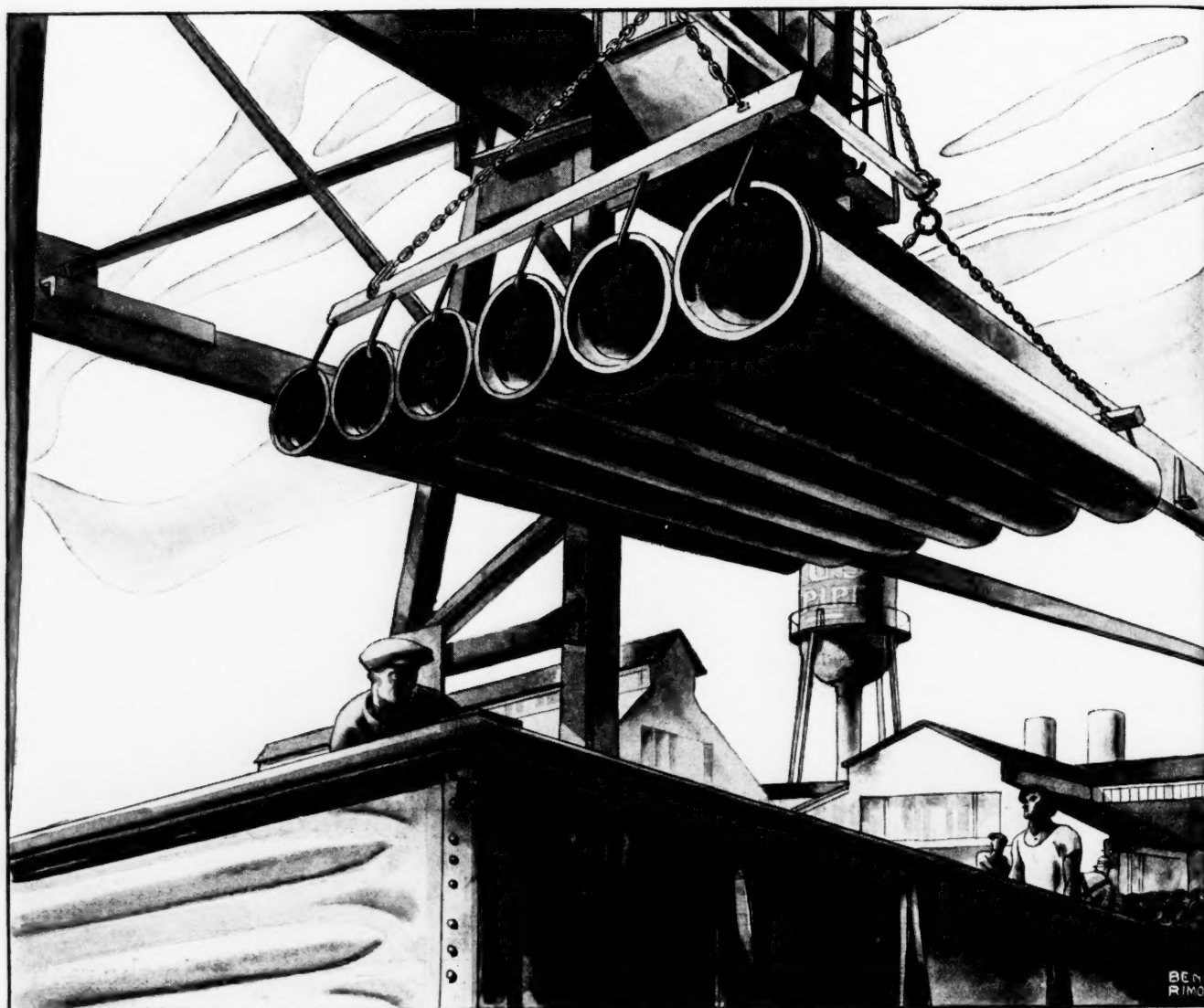
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# SUPER-DE LAVAUD PIPE



## From The Plant

The United States Pipe and Foundry Company has taken a long step towards reducing the hazard of damage to which all pipe is subject in transit, unloading and distribution. The hazard remains beyond our control but the odds are now overwhelmingly in favor of the pipe. In Super-de Lavaud Pipe we offer a cast iron pipe endowed with maximum protection against handling hazards — a pipe that is *shatter-proofed* to the extent that

### **IMPACT-RESISTANCE IS INCREASED 100%**

Super-de Lavaud Cast Iron Pipe is centrifugally cast by a patented improved process developed in our Research Laboratory. We have been producing and shipping Super-de Lavaud Pipe for more than a year. It has the same high tensile strength — the concentricity — the self-centering shoulder in the bell — in fact, every advantage and economy of de Lavaud Pipe as hitherto made *plus an extraordinary increase in impact resistance.*



# E Means Maximum Protection



## nt To Under Ground

Thus, de Lavaud Pipe which for 10 years has rightfully been regarded as ideal pipe for service underground now becomes Super-de Lavaud Pipe with maximum protection from plant to underground. With Super-de Lavaud Pipe, the handling hazard is a negligible factor under any but abnormal conditions in transit, unloading or distribution.

It is obvious that this pipe will render super-service underground. It possesses the same high resistance to corrosion for which cast iron pipe is noted. It exceeds in all respects the requirements of the Federal Specifications Board for this product.

*Send for descriptive booklet with complete details.*

**UNITED STATES PIPE AND FOUNDRY COMPANY**

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MARCH NINETEEN THIRTY-FOUR



# GOOD ROADS AND MOTOR TRANSPORT

## Road Building Important Factor in Recovery Plans

Pointing to the fact that the State highway departments have almost completed the task of putting men to work under the special highway appropriation of \$400,000,000, provided by the National Industrial Recovery Act, Thomas H. MacDonald, Chief of the United States Bureau of Public Roads, declares these departments now stand ready to undertake new projects. Many projects made possible by the emergency highway appropriation have been completed, and as work on unfinished ones comes to an end it will be necessary to have new projects planned and ready to begin if the desired level of employment is to be maintained.

"Highway building will continue to occupy a prominent place in the recovery program," says Mr. MacDonald. "It is now well understood that highway work is especially valuable in relief of unemployment because the highway dollar is so widely diffused among many different industries in all parts of the country. Studies made by the Bureau of Public Roads establish the fact that almost 90 per cent of the taxpayers' road dollar eventually is paid to workers in wages and salaries and, in addition, many widespread industries receive a financial stimulus."

Mr. MacDonald asserts that it becomes increasingly clear that State highway departments are disciplined organizations and close-knit agencies of government, sufficiently well dispersed to insure reasonable success of emergency employment effort, and that it is inevitable that State and Federal highway organizations should be called upon to take a prominent part in unemployment relief projects through public works. It is cited that the last Congress failed for the first time in 17 years to make definite provision to continue Federal-aid road construction, but provided in the National Industrial Recovery Act the construction of highways as a means of employment during 1934.

Congress appropriated \$400,000,000 to be expended on Federal-aid roads on extensions of such roads into and through municipalities and on secondary or feeder roads in all States. An additional \$50,000,000 was appropriated for national forest, park, Indian reservation and public lands roads. At this time, some States have already put practically all their allotment of highway funds to

work. Looking to the coming year's work, maintenance activities promise to be an important function of the State highway departments. Under Federal-aid laws highway maintenance has always been an obligation of the State offering an "excellent opportunity for organized work to benefit unemployed men in all walks of life."

In addition to repair and maintenance work, there is always need for betterment work on the highways, it is pointed out, such as widening shoulders and inside curves, drainage work, cobble gutters, fencing right-of-way, building guard walls, tree planting and other such landscape work.

## Modern Roads and Transport Aid Development of Cotton Port

With a brief outline of transport development in the handling of cotton at the Port of Galveston, Texas, the Shippers Digest of Galveston points out that through these developments in transport Galveston "has kept at the front as an efficient handler of cotton." Three principal methods of handling cotton from warehouse to shipside are illustrated, beginning with the two-wheeled cart drawn by a mule, used in the early days and capable of handling three bales at a load. This period was followed by an era of better roads when the three-mule float was used, designed to carry 13 bales of cotton and to go onto any of the wharf aprons or into the waterfront warehouses.

Following this period, the motor truck came along, carrying 20 bales at a load and making better speed than was possible by the older methods. The truck still is employed to a great extent at the port, although a few years ago the tractor and trailer system was brought into use. Each tractor hauls a train of five trailers, ten bales to each trailer, and moves from warehouse to waterfront as rapidly as a truck with 20 bales. The trailers are so designed that the train may make the sharpest curves as easily as the old time two-wheeled cart. The system has proven itself of such value in the last few years that large fleets of this type of transportation are now in use. The value of the system, however, is not alone in the design of equipment, but also because of improved roadways along the Galveston waterfront. Paved roads serve all piers and paved streets connect warehouses back of the waterfront.

## Truck Law Declared Unconstitutional

Declaring unconstitutional an act of the 1933 Legislature of Tennessee regulating the weight, length and speed of freight trucks on Tennessee highways, Chancellor R. B. C. Howell of Nashville has made permanent an injunction preventing the State from enforcing the act. This decision, it is pointed out, does not mean the use of trucks unregulated, but that their operation will be subject to laws in force prior to the act of 1933.

## Two New Models Feature GMC 1934 Truck Line

In the new line of 1934 General Motors Trucks, as announced by General Motors Truck Company, Pontiac, Mich., are two new types of trucks designed especially to meet length and weight restrictions imposed by statute in different States without sacrificing payload capacity. These are the "cab-over-engine" models and "set-back front axle" models, both types being shorter than trucks of conventional design. With reduced length, there is not only the advantage of meeting legal restrictions in the length of truck and trailer trains, but increased facility of operation in congested traffic, as well as the need of less garage space.

The cab-over-engine model presents an impressive appearance, there being no hood with the front of cab nearly flush with the front end of the chassis. The engine is mounted in a "wind tunnel" that extends back from the radiator grille and divides the cab floor and seat into two sections. Engine heat is swept through this conduit and discharged downward into the air stream. Heat insulation in the walls of the tunnel prevents the cab from heating. Another unusual feature is the front door construction, while the driver's cab is provided with a controlled ventilating system.

In addition to these new types of trucks, GMC is introducing new or improved units throughout its line of heavy, medium and light duty commercial vehicles.

## Louisiana Auto Licenses Increase

The sale of 1934 Louisiana automotive license plates totaled \$3,332,388, according to Secretary of State E. A. Conway, Baton Rouge. These figures compare with \$3,070,800 for 1933.



# ON THE JOB...NEAR THE JOB..

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● The economy of portability—producing aggregate accurately sized and perfectly washed *on the job*—is only the first step to new savings with this equipment. Western Portable Crushing and Washing Plants have been operated side by side with similar equipment in the same pit under identical conditions. Records of such tests show that, not only in operating cost alone, but including the initial equipment cost, the Western plant does a better job for less money.

● County highway officials will be quick to recognize the importance of lowered production costs. The advantages to the contractor of economical portable equipment producing aggregate exactly to specifications, on or near the job, can make the difference between winning and losing bids—and profit or loss on contracts. Send the coupon for details.



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MARCH NINETEEN THIRTY-FOUR



# EQUIPMENT

## NEW AND IMPROVED

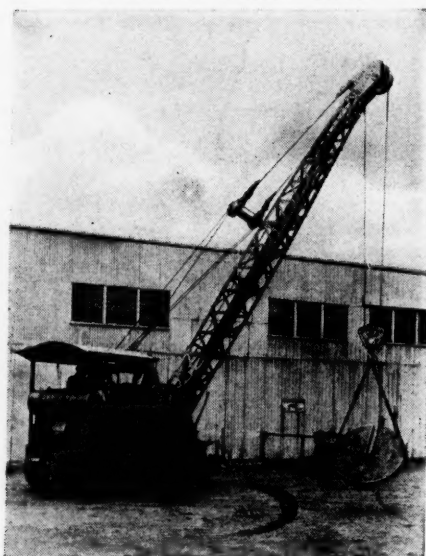
### "KO" and "LO" Oil Tractors

Two new oil tractors have been announced by the Allis-Chalmers Manufacturing Company's Tractor Division, Milwaukee, Wis. These models are equipped with a new type of oil engine which operates on Diesel fuel, thus introducing a new principle in tractor engine design. The use of a Bosch Diesel fuel pump is employed to inject the cold charge with cold air and ignite it with a spark from a magneto. Fuel consumption is said to be low at all loads, low pressures and orderly burning of the fuel insuring smooth running with great lugging ability and ample power. Two models of the tractors are now available — the model "KO" developing 48 drawbar horsepower and weighing about 11,200 pounds, and the model "LO" developing 76 drawbar horsepower and weighing approximately 23,000 pounds.

### Harnischfeger General Utility Crane

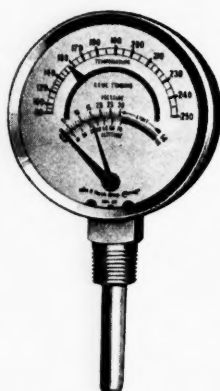
Providing greater transport speed, combined with unusual capacity and ability, a new general utility crane known as the "Hustler" is introduced by the Harnischfeger Corporation, Milwaukee, Wis. This new heavy duty crane is claimed to be unique in its engineering, incorporating an unusual feature in its drum arrangement—two side drums and a front drum, all operating independently. Each drum has three forward speeds and one reverse speed. Friction clutches are of the band type with large diameter to insure easy, smooth operation with heavy loads; all gears are fully en-

New P & H "Hustler" Crane



closed and run in oil, and roller bearings are used in the main machinery, with renewable bronze bearings in the traction mechanism. With a detachable stiff-leg under the boom, the machine is capable of lifting 35,000 pounds.

### Combined Gauge and Thermometer



Means for convenient and accurate reading on one instrument of hot water or low steam temperatures as well as pressures or feet of water are provided by the new Marsh-Ther-Alti-Meter in dial type construction, introduced by the Jas. P. Marsh Corporation,

Chicago. This instrument is especially applicable for use on hot water types of house heating boilers of either gravity or pressure system type, and also on steam apparatus where low pressure steam and temperature of the steam is to be shown, on piping and other similar applications.

### "Caterpillar" No. 33 Terracer

The Caterpillar Tractor Company, Peoria, Ill., announces "Caterpillar" No. 33 Terracer designed for use with tractors ranging from 25 to 50 horsepower. The machine is 219 inches long, 67 inches wide and weighs 4,523 pounds, with 9-foot blade as standard equipment, but may be furnished with blades of other lengths. It incorporates such features as ship channel frame, heavy steel circle, rigidly reinforced blade, balanced lifting mechanism, leaning wheels, goose-neck tractor hitch and short rear axle. The unit is particularly adapted to terracing and other farm grading.

### New Wood Putty

A new wood putty, said to be non-shrinkable and of high adhesive properties, is announced by the Las-Stik Mfg. Co., Hamilton, Ohio. It may be colored to any shade and is packaged in tubes and cans for the large or small consumer in repairing furniture, automobile bodies, pattern making, etc.

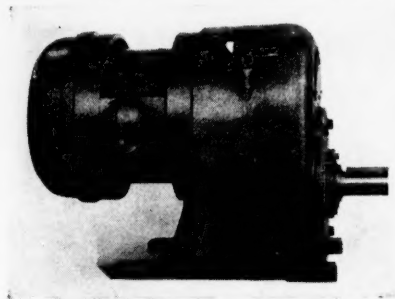
### Swartwout 14 Point Plus Ventilator

To keep pace with the rapid advance in the air conditioning field, the Swartwout Company, of Cleveland, Ohio, has introduced a ventilator described as "containing 14 points plus of ventilating superiority," overcoming according, to the manufacturers. The fourteen points plus, as enumerated, include: Rotary, ventilator, bronze ball bearings, over-size outlet opening, outside adjustable Louver dampers and operating mechanism, Louvers opening outward, vane of proper size and neat design, constructed of heavy gauge Armco ingot iron, joints double seamed; interior members of structural shapes, either angle or channel iron; interior members coated with rust resisting material after forming and punching; sloping back to prevent accumulation of water, ice and snow; perfectly balanced by counterweight; unobstructed elbow-like design; ventilator opening with flared edges.

### Single-Reduction Reliance Gearmotors

The Reliance Electric and Engineering Company, Cleveland, Ohio, manufacturers of electric motors, have added single-reduction units to their line of gearmotors. These are used for ratios up to 6:1 inclusive, and may be furnished with both a-c and d-c motors of various types in sizes rated  $\frac{1}{4}$  hp. and up. Multi-speed and adjustable-speed motors may be used. Entire reduction is obtained in a single pair of gears, whose substantial feet, cast integral with the gear housing, afford a solid support close to the point of maximum torque application. Only three bearings are used, one of which is actually the motor bearing, and motor parts and gears may be readily removed and assembled. Advantages of these combined units are pointed out as lower first cost, reduced space, lower installation and maintenance expense.

Type S Reliance Gearmotor





# LIMA brings new economies to dragline users . . . .

Is there any wonder that owners of LIMA draglines are enthusiastic about their machines? LIMA advantages are giving them new low figures on operating costs.

Take the drums for instance. Their extra wide face and exceptionally large diameters accommodate maximum cable lengths without double wrapping. This desirable feature plus the advantage of having the drag cable lead off the bottom of the drum to the fairlead (a distance of 7 feet) affords cable economy never

before approached on dragline operations.

Other features which add to the efficiency of LIMA draglines are extra long crawlers with wide shoes and ample rake, large diameter boom point sheave with wide throat, abundant road clearance beneath crawlers, quiet, long-lived helical gears, and anti-friction bearings at every vital bearing point.

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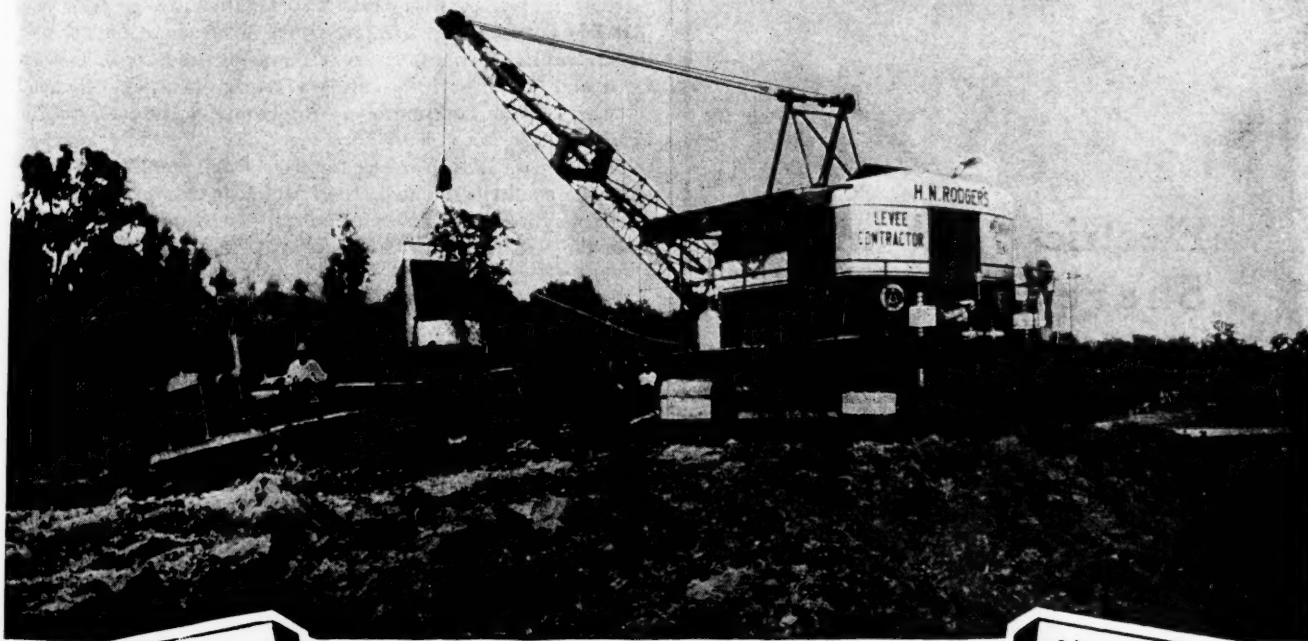
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## FINANCIAL NEWS

### Home Loan Bonds

Based on the President's request that the Federal Government guarantee the principal of the Home Loan Bonds, the market value for these securities has risen appreciably. Congress, in addition to guaranteeing the bonds, is expected to authorize the Home Loan Board to issue, perhaps, as much as two hundred million dollars for funds to modernize and repair homes. This is in addition to the two billion dollars already authorized.

### Buying Power of the Dollar

Frequently quoted in these columns are the surveys of the National Industrial Conference Board relating to industry and finance. A recent report states that the American dollar, worth 63.8 cents in gold at the end of 1933, had an internal purchasing power considerably above that of the dollar of 1926. However, the purchasing power was not equal in all commodity groups. The man who took his dollar to the farm in December 1933, could buy 100 per cent more than in 1926. If he went to the wholesale markets he could buy 41.2 per cent more, but outside of farm products and food, he could buy only 29 per cent more of other commodities.

### Farm Bankruptcies

Notwithstanding aid to farmers, farm bankruptcies increased last year over the year before. There were 5,917 cases of voluntary bankruptcy on the part of farmers, which was 1.2 per cent more than the preceding year.

The Department of Agriculture says the increases were chiefly in the North and East, while the number of bankruptcies in the South and West decreased.

### Export and Import Banks

It has been decided to start three Government export and import banks for the purpose of financing trade with Russia, Cuba and other foreign countries. George N. Peek will head the three while continuing as foreign trade adviser to the President.

The purpose is to provide, for Americans wanting to trade with the countries named, credit which it is said is not now available through commercial banks. The capital is to come from the Reconstruction Finance Corporation.

### A New CWA

Announcement was made that the CWA was to be abandoned May 1st, when the last of the workers were to have been discharged. The appropriation passed by Congress, it has been expected, would be exhausted by that time. Students of affairs wondered what the effect would be then. Had we given the idle a taste of Government help that would lead to fresh demands when the time came to stop it? Would industry be in shape to employ the millions which it was hoped prosperous conditions would enable it to employ when the Federal benevolence was withdrawn? In the meanwhile another plan is proposed by the President as an experiment, the details of which have been sketched in the press. Whether it will work any better than the CWA, which admittedly led to abuses of different kinds, will be known later.

### North Carolina Finances

The Charlotte Observer, one of the country's leading newspapers, calls attention in its editorial columns to the better financial sheet which North Carolina presents. It says "a year ago New York bankers were not at home to North Caro-

(Continued on page 42)





ONE of the first hundred in size among the Nation's banks, First and Merchants National invites your business rather on the basis of conservative management and its record of always having taken care of its customers' proper credit requirements, than on the basis of size.

## FIRST AND MERCHANTS National Bank of Richmond

John M. Miller, Jr., President



One of a series, "What is the Associated System?"

## Serving America's Main Street

Most of the 4,000 communities served by the Associated System are of small size. Only 86 have more than 10,000 population. Whether it be a small town in New England or a village in Kentucky or Tennessee, the service is comparable with that supplied in great cities.

Largest groupings of the communities served are in New York, Pennsylvania and New Jersey. During the period 1928-1932, the average residential electric rate paid to the System underwent a reduction of 15%.

About 100,000 of the 1,417,000 total customers have invested in Associated securities. The Plan of Rearrangement of Debt Capitalization aims to keep the Associated System intact and to protect the investments of these customer-investors as well as the investments of all the 350,000 Associated security holders.

Associated Gas & Electric System



61 Broadway, New York





**GET IT FROM GULFSTEEL**

**INGOTS**  
**BILLETS • SLABS**  
**BLOOMS**

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**BARS • CHANNELS • ANGLES**  
**PLATES**

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**STEEL SHEETS**  
**FORMED ROOFING**

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**BARB WIRE**  
**WIRE FENCE • FENCE POSTS**  
**STAPLES • BALE TIES**

---

**RODS**  
**WIRE • NAILS • SPIKES**  
**WELDING WIRE**

*The South's largest  
independent manufacturer of  
Finished Steel Products*

**GULF STATES STEEL COMPANY**

**BIRMINGHAM, ALABAMA**



## North Carolina Finances

(Continued from page 40)

lina applicants for financial favors. Today they are running over themselves in a mad scramble to get their hands on the state's paper."

The interest rate has been lowered from 6 per cent to 4½ per cent, and loans made in New York have been reduced from \$13,000,000 to about \$4,500,000.

Bonds of the State, which had gotten down to 65, "have now returned to their full stature." The State is not only operating on a cash basis in attending to its own functions, but it has been meeting its interest and principal commitments the day they are due.

Due credit is given the sales tax for its part in the changed condition.

## Bond Advances

Interested attention continues to be directed to the rise that has taken place in the bond market. Probably a larger amount of funds have sought investment in this way since the first of the year than has been seen before in a similar length of time. It is accounted for in part by the return of American capital from abroad under the new monetary policy which established a gold basis for dollar value, and while this has been going on the prices of bonds, due to the increased demand, have had one of the most notable advances in recent history. This has shown itself in improvement in prices for not only governments, but municipal bonds of high grade and bonds of well known corporations. This advance has gone on while the government has offered huge issues for investment, which have been greatly over-subscribed, and in the face of the prospect of further government financing in large amounts.

## Government Debt

Huge sums for everything continue to be ladled out by Congress with an abandon that is startling. The man on the street may not understand, but as he sees it there is danger of our being carried into such an overwhelming mass of debt that there will be no escape and the country will be forced, whether the President wants it or not, to greenback inflation.

## No New Monetary Legislation

Secretary of the Treasury Morgenthau has asked the House Banking and Currency Committee not to decide on any new monetary legislation during the current session of Congress. He wants the balance of the year to work out the present program before any change is decided upon. The Secretary is quoted as saying he does not "believe any one is wise enough to tell now what our future monetary policy will be." We have not had sufficient experience.

## Stock Exchange Listings

The new securities listed on the New York stock exchange during 1933 were less than four hundred million dollars, which is the lowest total on record.

## The Price Index

The wholesale commodity price list advanced last month to the highest figure since November, 1930. The index as of March 1 was 165.026, a rise of 37.42 or 29.3 per cent over March 1, 1933.

## Gold Money and Reserves

Federal Reserve bank statements last week indicated an increase of \$198,000,000 in monetary gold stock. This was due to the huge gold imports in February. Also, the volume of excess reserves have reached the highest figure on record, above one billion dollars. Of this amount \$357,000,000 is owned by large New York banks.

MANUFACTURERS RECORD FOR



# Who shall refine the cane sugar you buy?

## Expanded capacity a legacy of our War effort

During the World War, the cane sugar industry went under governmental control as a patriotic service, expanding its capacity to care for the Allied nations. No provision was made by our Government to hold, through trade agreements, the Allied nations' business after the War. Since the War nations have by tariffs, bounties and other devices closed their doors against American refined sugar, and by bounties on exports have displaced our refined sugar even in world markets.

FROM	1933	1932	1931	1930	1929	1928	1927	1926	1925
Cuba.....	439,319	423,252	326,662	244,485	228,541	166,720	79,201	51,859	1,182
Puerto Rico.....	97,129	85,558	72,314	66,164	38,969	40,006	10,584	2,891	707
Hawaii.....	22,006	19,904	9,720	15,003	8,723	14,641	12,328	7,244	8,592
Philippines.....	61,752	50,309	32,009	25,197	8,396	7,103	1,836	4,000	2,647
Foreign.....	6,392	8,295	6,499	9,197	1,820	5,200	917	3,394	3,654
Long Tons.....	626,598	587,318	447,204	360,046	286,449	233,670	104,866	69,388	16,782

## Tropical refineries hum. U. S. refineries work part time

The refined sugar brought in during 1933 was sufficient to supply 15,000,000 Americans, equivalent to more than the consumption of 21 states, and resulted in reduced refining in United States, dismissal of employees, reduced wages, and decreased purchases of supplies.

## Tropical refiners naturally seek to perpetuate their duplication of United States refineries by a "quota" in the United States market!

But would it be fair to the domestic industry, their employees and stockholders, numbering tens of thousands? Would it be in the public interest? Would it square with American policy, old and new? The Philippines and Puerto Rico have been liberally treated and should be content to continue as producers of *raw* sugar, as originally intended. Would it be fair to give Cuba a "quota" on chocolate, or Italy on oranges and lemons, or Germany on shoes, or would it be fair to give Canada a "quota" on flour, or Holland on cheese? If not, why should the sugar refining industry be subject to such official treatment?

## No justification for Cuba to duplicate domestic refineries

In 1920 the Tariff Commission pointed out that Cuba did not *refine* sugar, and so the 20% preference on Cuban *raw* sugar afforded protection to American refiners. This theory failed when Cuba built refineries. Cuba knew full well our tariff principle of providing a higher duty on an imported manufactured article than on the raw material imported for its domestic manufacture. Raw cocoa beans are on the free list but finished chocolate pays 40% duty. Raw silk is free of duty but silk itself pays 65% duty. And so generally. Cuban duplicators of domestic sugar refineries well understood that they had no claim on the United States market or households.

This advertisement is published in the public interest and support of employees, stockholders and supply firms throughout the country

## United States Cane Sugar Refining Industry

Refineries in Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Georgia, Louisiana, Texas and California

MARCH NINETEEN THIRTY-FOUR

43

## Deliberate duplication in the Tropics

Due to a loophole in the tariff the domestic industry has been further imperiled by a deliberate Duplication in the Tropics of refining facilities long established here. Our Tariff and Colonial Policy encouraged the production of *raw* sugar in the Islands and protected its *refining* on the Mainland. The tariff loophole reversed that—clearly a mistake and a costly one. The extent of this duplication is shown by the following table of *refined* sugar coming into continental United States since 1925.

## Foreign countries generally safeguard their refining industry from duplication even in their own colonies

This is true of Canada, England, France, Italy, Holland, Sweden, Denmark, Japan, Australia and generally throughout the World. Refining in country of consumption is the approved practice. Such is the practice in Canada, England, France, Holland, Japan and other countries and always has been the practice in the United States. It has proven best for raw sugar producers everywhere. It has proven the best safeguard for the households rather than dependence on remote tropical refineries.

There is no desire to hamper the progress of the Islands. It was the early establishment of the *refining* industry here that made possible the development of the *raw* sugar industry on the Islands.

## Why we are advertising these facts to the Home Makers of America. Decision at Washington will affect Homes of Nation

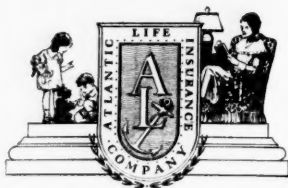
We enter daily about 25,000,000 homes. Cleanliness, purity and prices are daily topics. If sugar prices are high the households look to us. If low, the sugar producers in the Tropics look to us. We stand between these two large groups, with a permanent relationship to both. Sugar refining and distribution, to be efficient in all respects, must be a large volume industry. In years of crop failure we search the World for supplies. In years of war we are vital to national defense. Anything which lessens our volume lessens our efficiency and increases our costs. The households of the country will be the first to feel the effect. United States sugar refiners now have the capacity and can employ labor if the sugar now refined in the Islands were refined in the United States.

We are advertising these facts so that the home makers of the country may know that our Federal Government at Washington has been asked by a small minority group of producers of the Philippines, Puerto Rico and Cuba to make a decision against the interest of our people in the United States.





**ATLANTIC  
LIFE INSURANCE  
COMPANY**  
**34th Annual Statement**  
December 31, 1933  
RICHMOND : : VIRGINIA  
ANGUS O. SWINK, President



ASSETS		
CASH ON HAND AND IN BANKS AND TRUST COMPANIES	(2.48%)	\$602,532.23
(Includes \$60,389.46 in closed banks, after deduction for estimated loss.)		
BONDS:		
United States Government .....	(3.41%)	828,756.56
Municipal .....	(2.09%)	507,156.47
Industrial .....	(.57%)	138,664.84
Public Utility .....	(.73%)	177,155.12
Railroad .....	(1.24%)	299,303.51
Total Bonds (8.04%)		\$1,951,036.50
Bonds carried at amortized value excepting two issues of \$25,000 each carried at convention values.		
FARM LOANS .....	(1.64%)	397,554.75
CITY LOANS .....	(31.92%)	7,749,510.47
First mortgage loans have always been the primary asset of American life insurance companies; farms and homes are the greatest possessions of our people and will continue to be such. Our average loan is \$3,546.82, and the average proportion of loans to appraisals is 33 1/3%.		
POLICY LOANS AND PREMIUM NOTES ..	(34.11%)	8,281,338.09
To those who have been compelled to borrow on their policies we would strongly urge that they repay their loans as soon as possible, thus restoring their contracts to par value. Every dollar paid off on a loan is a 6% investment for the policyholder.		
REAL ESTATE .....	(16.59%)	4,026,186.16
In our real estate account is the amount of \$400,000, the value of our present home office building, and \$205,085, the value of the property acquired as the future home of Atlantic Life. We own no other large single properties, nor do we hold mortgage liens on such. The balance of \$3,420,501.16, averaging \$5,037.56 per property, had an appraisal value of \$7,795,953.23.		
PREMIUMS DUE AND DEFERRED .....	(2.38%)	578,183.89
Premiums or instalments thereof (due, or earned but not due) not exceeding in each case the reserve on the policy included as a liability in legal reserve.		
INTEREST DUE AND ACCRUED, AND OTHER ASSETS .....	(2.84%)	689,468.67
<b>TOTAL ASSETS</b> .....		<b>\$24,275,810.76</b>

LIABILITIES		
LEGAL RESERVE ON POLICIES .....		\$20,754,770.48
Verified and approved by the Superintendent of Insurance of Virginia. This is the amount which, with future premiums and interest, will enable the company to meet all claims of policyholders. Our reserves are set up as required by law, on a sound and conservative basis, making safe and ample provision for what the future has in store.		
DEATH CLAIMS DUE AND UNPAID .....		None
Claims are paid promptly upon receipt of due proofs.		
CLAIMS REPORTED BUT PROOFS OF LOSS NOT RECEIVED .....		116,680.28
PRESENT VALUE OF DEATH, DISABILITY AND OTHER CLAIMS PAYABLE IN INSTALMENTS .....		996,953.45
The amount which, with future interest, is required to pay future income to policyholders and beneficiaries.		
PREMIUMS AND INTEREST PAID IN ADVANCE .....		243,566.58
RESERVE FOR TAXES PAYABLE IN 1934 .....		62,500.00
Few institutions in the country are taxed to the extent that life insurance companies are. In addition to federal taxes, we pay to States approximately 2 cents of each dollar which is paid to us in premiums.		
POLICYHOLDERS' DIVIDEND FUNDS .....		397,390.66
Funds held to pay dividends to policyholders in future years.		
MISCELLANEOUS LIABILITIES .....		188,848.82
RESERVE FOR BUILDING DEPRECIATION .....		260,627.26
An increase of \$61,044.79 over last year.		
CONTINGENCY RESERVE .....		75,000.00
CAPITAL .....		500,000.00
Fully paid-up capital stock is a further guarantee of strength.		
SURPLUS .....		679,473.23
A still greater margin of safety for the protection of policyholders.		
<b>TOTAL LIABILITIES</b> .....		<b>\$24,275,810.76</b>

We have made an examination of the accounts and items entering into the Balance Sheet of the Atlantic Life Insurance Company, Richmond, Virginia, at December 31, 1933.

Cash on hand and on deposit was verified. Mortgage Loans, Loans to Policyholders, Collateral Loans and Bonds were verified by inspection of those on hand, and those in process of collection or on deposit were satisfactorily accounted for. Bonds are valued on an amortized basis, with the exception of two issues which are carried at "convention" values. The correctness of all other assets was established to our satisfaction.

The Net Reserve of \$20,754,770.48 was computed by the Actuary of the Company and certified by the Bureau of Insurance and Banking of the Commonwealth of Virginia. The other actuarial liabilities were computed by the Company's Actuary. Tests of the records indicated that proper provision has been made for all other liabilities.

In our opinion, the foregoing Balance Sheet has been prepared so as correctly to reflect the financial condition of the Company at December 31, 1933, according to its books and records.

(Signed) A. M. PULLEN & CO.  
Certified Public Accountants

For information about modern plans of life insurance, feel free to call upon our representatives to serve you; they will be glad to do so, and without obligation on your part. Inquiries are invited from men of character and integrity who are interested in an agency contract that offers a real opportunity.

**LIQUIDITY plus DIVERSIFICATION equals STRENGTH**

## Life Insurance Progress

● President Swink of the Atlantic Life Insurance Co., Richmond, says to his policyholders in his annual statement—"life insurance has come through the depression in fine conditions, justifying the faith of millions of policyholders. Despite everything that happened last year, life companies paid to policyholders and beneficiaries the gigantic sum of \$3,100,000,000."

The surplus and special reserves of this company at the end of the year were \$1,015,100, having been increased by \$61,044. Assets December 31, totaled \$24,275,810, of which amount cash and bonds represented 10.52 per cent.

First mortgage loans held by the company amounted to \$8,147,000. By far the greater part was on city residences and small business properties, only a small proportion being farm loans.

● The Jefferson Standard Life, Greensboro, N. C., a leading Southern company, had one of the best years, if not the best year, of its existence in 1933. New paid for insurance totaled \$36,456,000, which was an increase over 1932.

All listed securities held by the company were carried in their statement at the market values of December 31, 1933. This announcement is of unusual interest to policyholders everywhere.

Of its assets held in the form of mortgage loans, amounting to \$17,202,000, city loans accounted for the greater part of it, being \$16,542,000 as compared to \$659,000 farm loans.

● The John Hancock Mutual Life Insurance Co. of Boston, at its annual meeting, reported an increase of assets during the year of \$16,208,000, while its total admitted assets amounted to \$655,664,000.

The report to the directors stated that it was found expedient to maintain the company in a liquid position, at a temporary sacrifice of interest rates, with the result that there were liquid assets of some \$45,000,000, of which \$15,000,000 was in cash, \$20,406,000 in government bonds and obligations of other U. S. governmental units, amounting to over \$9,000,000. However, said the report, "the pursuit of a more normal program of investment is now being resumed."

Mr. Ernest J. Clark, well-known President of the American College of Life Underwriters, has had charge of the company's interests in Maryland and District of Columbia for the past 37 years. This company has paid out to policyholders and beneficiaries, since its organization, more than \$973,000,000.

● Another outstanding example of progress in the insurance field is that of the New York Life Insurance Co., whose assets in 1933 passed the stupendous sum of \$2,000,000,000. The company announced in its statement to the public, at the close of its year it had met every obligation from its current cash income and closed the year with more assets than at any other year end in its history, after having made new investments amounting to \$92,900,000.

During the year more than \$70,000,000 was paid to widows, children and other beneficiaries of policyholders who died, while \$185,787,000 was disbursed to living policyholders and holders of annuities.

The company voluntarily set up two special contingent reserves. One of these special reserves amounted to \$21,000,000, and is said to be sufficient to cover the difference between December 31, 1933 market quotations of securities and the values which have been carried in assets, as prescribed by the National Convention of Insurance Commissioners, for all stocks and bonds which for any reason are not carried in assets at amortized value.

Of their mortgage loans, less than 1 per cent of the total was on farms.



# NEW YORK LIFE

## INSURANCE COMPANY

A MUTUAL COMPANY FOUNDED IN 1845

INCORPORATED UNDER THE LAWS OF THE STATE OF NEW YORK

### 89<sup>TH</sup> ANNUAL STATEMENT, DECEMBER 31, 1933

#### To the Policy-holders and the Public:—

The service of a life insurance company is measured, largely, by its returns to policy-holders and beneficiaries. By this standard the New York Life accomplished more in 1933 than in any other year since it began business in 1845.

In this year of stress, in addition to making many policy loans, the Company paid the enormous sum of **\$255,977,483** to policy-holders, beneficiaries, and annuitants.

It closed the year with Assets amounting to **\$2,010,943,112**, the largest in its history, valued as prescribed by the National Convention of Insurance Commissioners. The Company's total Liabilities were **\$1,896,651,321**.

Its surplus funds reserved for general contingencies amounted to **\$114,291,791**.

In the interest of conservatism, the Company voluntarily set up in its liabilities two special contingency reserves as follows: **\$21,014,507**, which is the difference between December 31, 1933 market quotations and the values carried in Assets of stocks, and of bonds in default, bonds of companies in receivership, and bonds which for any reason are not carried in Assets at amortized value; and **\$7,500,000** for deferred mortgage interest collections, which are larger than normal due to the general economic situation.

The Company also set aside a reserve of **\$48,038,244** for apportionment of dividends during 1934, a sum sufficient to provide the same regular annual dividend on each individual policy as was paid in 1933, except on term insurance policies.

Of special interest was the increased demand for annuities. Many men and women, desiring to secure a fixed

income for life and relief from investment worries, placed their capital in annuities providing a guaranteed life income. The total so invested was **\$20,662,386**, a larger amount than in any other single year.

The total insurance in force represented by **2,672,876** policies was **\$6,869,268,269**. The total new paid for insurance was **\$378,669,800**.

The following table shows the diversification of the Company's Assets as reported to the Insurance Department of the State of New York and valued as stated above:

		Per Cent
Cash on Hand or in Bank . . . .	\$30,943,412.43	1.54
United States Gov't. Bonds . . . .	98,164,386.21	4.88
State, County, Municipal Bonds . .	154,913,244.26	7.70
Public Utility Bonds . . . . .	154,483,453.00	7.68
Industrial and Other Bonds . . . .	18,598,126.14	.93
Railroad Bonds . . . . .	360,293,658.42	17.92
Canadian Bonds . . . . .	39,957,188.69	1.99
Foreign Bonds . . . . .	2,064,448.32	.10
Preferred and Guaranteed Stocks . .	67,923,705.64	3.38
Real Estate (Including Home Office) .	72,477,359.29	3.60
First Mortgages, City Properties . .	495,297,998.40	24.63
First Mortgages, Farms . . . . .	17,353,431.95	.86
Policy Loans . . . . .	413,873,648.41	20.58
Interest & Rents Due & Accrued . .	41,269,429.08	2.05
Other Assets . . . . .	43,329,621.78	2.16
<b>TOTAL ASSETS . . . . .</b>	<b>\$2,010,943,112.02</b>	<b>100%</b>

Further information about the Company will be furnished upon request to its Home Office at 51 Madison Avenue, New York, or to any of its Branch Offices throughout the United States and Canada.

*Thomas A. Buckner*  
President

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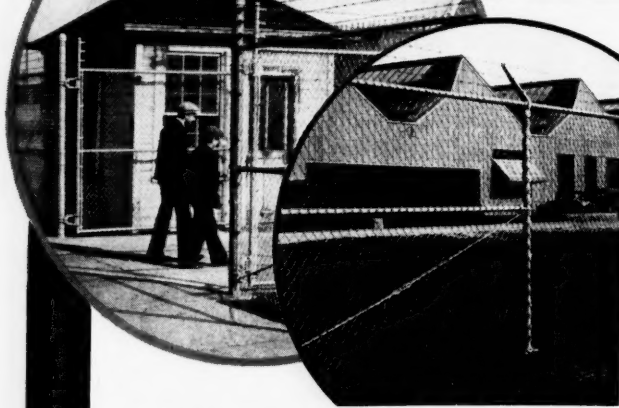
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America's first wire fence—since 1883



## ORIOLE



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Hot Rolled and Hot Rolled Annealed Steel Sheets  
Blued Stove Pipe Stock  
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Liberal stocks of galvanized products are maintained at all times.

Write for our new *Differential and Extra Booklet*

**THE EASTERN ROLLING MILL CO.**  
BALTIMORE—MARYLAND

## OVER THE EDITOR'S DESK

JOHN E. ZIMMERMAN, President of the United Gas Improvement Company, is quoted as saying that governmental policies attempting to "create employment, stimulate recovery and produce a new social order," destroy with one hand what they seek to accomplish with the other.

Referring to the power industry and the excuse used that public plants will provide a yardstick to measure operating costs of the electric industry generally, he is quoted as follows: "the most obvious fallacy of such a theory is that a yardstick created by subsidies, tax-freedom, low interest rates and other governmental advantages, and which escapes all historical and development charges of the past, is hardly an accurate gauge of private business costs, which include helping to carry every government experiment."

THE LABOR DEPARTMENT reports that since March 1, 1933, employment in manufacturing and non-manufacturing industries has increased 2,387,000 with \$60,200,000 added to the weekly payroll. This has been accomplished with only a slight increase in the cost of living.

The New York State Labor Department reports employment figures 18.6 per cent above last year, and according to a survey conducted by the United Press, employment gains ranging from 12 per cent to 100 per cent over a year ago were reported from the principal industrial centers of the country.

IT SEEMS TO BE THE GENERAL FEELING on the part of those in authority in the NRA that the arbitrary adoption of a flat 30-hour week for all labor, cannot be universally applied without injury to business. General Johnson is on record to this effect and Secretary of Labor Perkins says—"my suggestion is to let the codes go on for a while by the trial and error method, wherein mistakes can be easily corrected rather than by passing a law saying nobody can work more than 30 hours a week."

OUR INTERNATIONAL TRADE for 1933 exceeded that of the year preceding by more than \$186,000,000. Exports amounted to \$1,675,020,000, showing a gain of \$64,004,000 over 1932, while imports amounted to \$1,448,990,000, which was a gain of \$126,216,000 over 1932.

Exports of textiles, which was first in value among eleven major export crops, totaled \$455,770,000, compared with \$408,803,000 for 1932.

AN INTERESTING LETTER from Lyman Delano, Chairman of the Board of the Atlantic Coast Line Railroad Co., relates that current carloadings on his line "are showing an excess of 20 per cent more than last year. The sentiment is very much better in the Southeast, and the good prices received for cotton and tobacco crops are reflected in purchasing power and a consequent increase in the Southbound freight movement. The passenger movement to Florida has exceeded all our expectations and the reports we get from hotel people are optimistic for a prosperous season."

IN A REPORT covering the period from April 5, 1933, to December 31, 1933, Robert Fechner, director of the Emergency Conservation Work, says the CCC. has given employment to a total of 550,000 persons. An average of 300,000 families each month have received a cash allowance ranging from \$20 to \$25 from sons and relatives enrolled in the camps.

Tests made by the Surgeon-General of the War Department

MANUFACTURERS RECORD FOR



disclosed that the men have gained in height, weight and general health. Physical examinations of 15,000 men showed an average gain of 7.28 pounds in weight and .277 inches in height.

Purchases made for the forest camps, the director reports, amounted to \$110,000,000, distributed among hundreds of industries.

AUTHORITIES IN THE AUTOMOBILE INDUSTRY anticipate output for 1934 may reach 3,000,000 units. If it does, this will exceed the 1933 output by 30 to 35 per cent. Automobile manufacturers have done their part this year in the tempting products which give buyers more for their money than for a long time.

THE THING THAT WE OFTEN OVERLOOK in this country is brought out forcibly by B. C. Forbes in his column containing an interview with a publisher, who said—"I have lately visited Russia, China, India, Britain and other countries. If people could only visit and see the standards of living there, how willing they would be to accept sacrifices in order to get conditions righted here."

AUTHORITIES ON REAL ESTATE VALUES are seemingly in agreement that real property is at the turning point in a movement toward higher values. There will be no real prosperity until property values are recognized and construction starts. While there are many vacant houses in every city, it is often overlooked that many homes are occupied by two and three times the number of people that they were intended to accommodate. Some writers estimate that a deficiency of as much as \$13,000,000,000 has accumulated since the middle of 1931, and that 4,000,000 families January 1st were sharing quarters with other families.

AIR TRANSPORT LINES in the United States increased their passengers from 504,575 in 1932 to approximately 550,000 in 1933, and express from 1,324,428 pounds in 1932 to about 1,660,000 pounds in 1933. All air lines flew approximately 52,000,000 miles on regular schedule during the past year, as against 48,000,000 miles in 1932.

INCREASED ACTIVITY IN BUSINESS in England continues. The unemployment rolls are considerably less than they were. Metal goods manufacturers employ 40,500 more workers than they did a year ago, while the cotton industry started in February with 15,000 more workers than in February 1933.

The revival is mainly in England's home market and credit is given largely to the British tariff which was adopted.

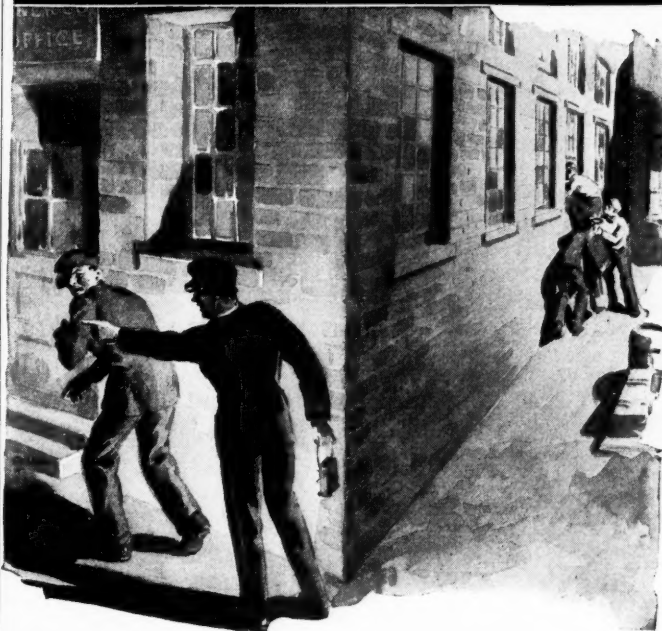
THE ENGINEERING FOUNDATION reports the invention of a machine named "centrifuge," which will determine exactly the strength of proposed structures under or above ground. It will be of particular advantage to miners in determining the rock strength of deposits, and also to engineers who have to deal with foundations. A model built of the same material as the contemplated construction is rotated at a calculated speed in the machine, which, substituting centrifugal force for the pull of gravity under actual conditions, shows the relative strains and stresses.

The machine is being used in the mining laboratories at Columbia University.

REPORTS CONTINUE FROM GREAT BRITAIN that flexible plate glass, produced in one of the largest British glass factories, is meeting with considerable success. It will crack under extreme conditions, but does not break into pieces. It is "flexible to a remarkable degree" and capable of withstanding enormous pressure, according to the American consul at Birmingham, England.

MARCH NINETEEN THIRTY-FOUR

## YOUR WATCHMAN CAN'T DO IT ALONE!



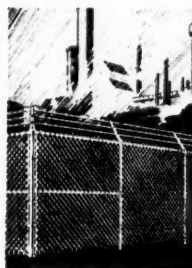
### Fence Protection is Essential

Your watchman needs help—he can protect only a small amount of property at any one time. The cheapest assistant you can hire is Cyclone Fence. It will pay you to put it on your payroll because Cyclone Fence works so many years that its annual cost is negligible.

Now, more than ever, it will pay you to put this 24-hour a day extra watchman on your property.

Cyclone Fence keeps unwelcomes away from your equipment. Protects from petty theft. Maintains perfect entrance and exit control. Makes your entire grounds safely usable for storage. Gives employees uninterrupted work hours.

Made of Copper—Steel and heavily Galvanized AFTER weaving Cyclone Fence resists rust years longer. Available in a variety of styles — and quickly erected by factory-trained men if you desire. Write for complete information. Address Department MR.



#### CYCLONE FENCE COMPANY

General Offices: Waukegan, Ill.

Branch Offices in All Principal Cities

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

Pacific Coast Division:  
Standard Fence Company, Oakland, Calif.

Cyclone—not a "type" of fence—but fence made exclusively by Cyclone Fence Company and identified by this trademark.

# Cyclone Fence

REG. U.S. PAT. OFF.





# INTERESTING FACTS

Gross farm income of the United States in 1933 was \$1,240,000,000 more than in 1932, an increase of 24 per cent, due chiefly to higher prices for crops and to benefit and rental payments by the A.A.A. The aggregate amount was \$6,383,000,000, including \$1,250,000,000 from dairy products, \$785,000,000 from vegetables, cotton and cottonseed \$670,000,000, grains \$600,000,000, hogs \$590,000,000, poultry and eggs \$580,000,000, cattle and calves \$505,000,000, fruits and nuts \$403,000,000, tobacco \$180,000,000, sheep and wool \$150,000,000, sugar crops \$71,000,000 and other crops \$320,000,000.

Building materials and products entering into the construction industry are now within about 14 per cent of the 1926 price level the announced goal of the Administration to restore profitable prices for business.

Tropical sugar refineries are humming; American refineries are shut down or working part time. In 1925 we imported only 16,782 tons of refined sugar. In 1933 white sugar imports

amounted to 626,598 tons, nearly 40 times that of 1925, which prevented domestic refineries from supplying the needs of 15,000,000 Americans, the equivalent of the actual 1933 consumption of 21 States.

While progress is being made in the domestic tung oil industry in several Southern States, tung oil imports from China were of record proportions in 1933. More than 116,000,000 pounds were shipped to this county as compared with 80,646,000 pounds in 1932. The South is capable of supplying this vegetable oil raw material essential to the paint and varnish industry.

Europe is buying heavily of nitrates. France recently ordered from the Atmospheric Nitrogen Company, Hopewell, Va., 40,000 tons, \$1,240,000 worth of nitrate of soda. Chilean nitrate shipments to Europe so far this year increased 700 per cent over 1933. As nitrates are used for making munitions as well as for agricultural purposes the increased demand is significant.

Florida's citrus crop this year will amount to 15,100,000 boxes of oranges and 9,800,000 boxes of grapefruit, based on February estimates. Last season the State produced 16,200,000 boxes of oranges and 11,800,000 boxes of grapefruit.

More persons are now employed in the cotton textile industry than in 1926. About 146,000 persons were added to company payrolls under the code. Wages for a 40-hour week average 27 per cent higher. Unfilled orders are higher than in 1929.

S. M. Garwood, production credit commissioner of the FCA is quoted as given instruction to local associations to "avoid making loans to farmers who are preparing to increase their production contrary to the program of the A. A. A." Each applicant for a loan must show he is on the list of those cooperating in the production control program.

Freight traffic handled in 1933 by the railroads was 275,082,712,000 net ton miles, an increase of 16,034,040,000 net ton miles or 6.2 per cent above 1932.

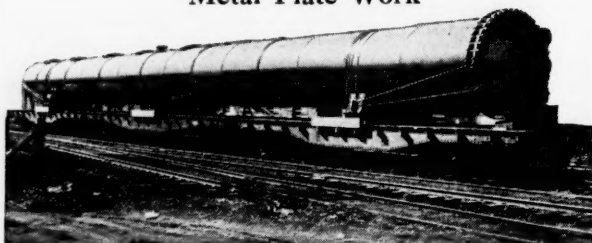
President Roosevelt has issued an executive order that a person whose earning capacity is limited because of age, physical or mental handicap, or other

(Continued on page 50)

## ♦ C O L E ♦

TANKS & VATS for ACID STORAGE NH <sub>3</sub> STORAGE Aluminum Alloy Steels Lead Lined Monel Metal Tin Lined	BOILERS—HRT and MANNING JACKETED KETTLES AGITATOR TANKS BUBBLE TOWERS GAS SCRUBBERS WELDED STEEL PIPE CREOSOTING CYLINDERS
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Lukens Nickel Clad Steel Plate  
Metal Plate Work



Cole Creosoting Cylinder 8' diameter x 138' long.

R. D. COLE MANUFACTURING CO.  
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NEWNAN, GA. New York Office,  
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## SOUTHLAND PRODUCTS

—WELDED OR RIVETED—

We now manufacture and offer to the trade tanks in all sizes for pressure or gravity work. Also other steel equipment of either

WELDED OR RIVETED CONSTRUCTION  
This applies to field as well as shop built equipment

Write us for information and quotations

Chattanooga Boiler & Tank Co.  
CHATTANOOGA, TENN.  
TANKS



Southern factories and railroads have installed Davis Tanks since 1888.

# DAVIS CYPRESS TANKS

Every Davis Tank embodies the accumulated technical skill of forty-six years of tank-building.

Just as cypress is without superior for investment economy, so are Davis Tanks unsurpassed in material, method of construction and reinforcing for service. A Davis water tank on a Davis steel tower, are plant purchases which have almost no limit of life and usefulness. Ask for new catalog of sizes and capacities.  
G. M. DAVIS & SON  
P. O. Box 5, Palatka, Florida





# TANKS and Steel Plate Work for Industrial Plants

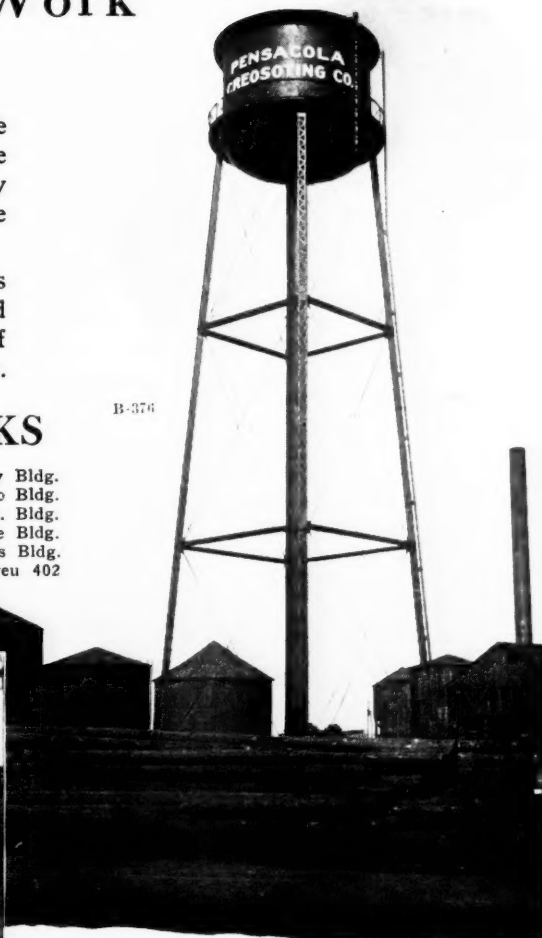
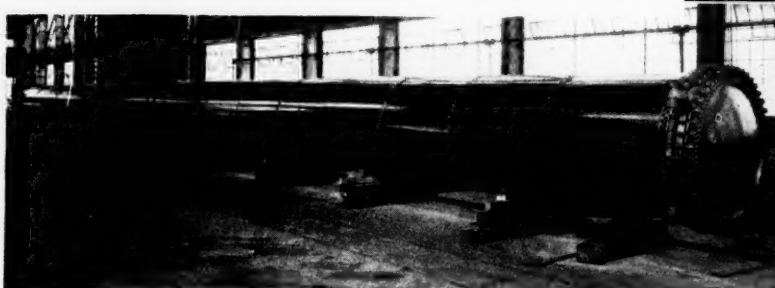
INDUSTRIAL plants use elevated tanks to provide water for general service and fire protection. The supply, which is held above the property, flows by gravity to meet all requirements. The tank illustrated at the right supplies an automatic fire protection system.

We also build storage tanks and plate work such as the 9 ft. dia. by 172 ft. creosoting cylinder illustrated below. When contemplating the installation of any of this type of work, write our nearest office for quotations.

## CHICAGO BRIDGE & IRON WORKS

Birmingham .....	1530 Fiftieth St. North	Chicago .....	2106 Old Colony Bldg.
Dallas .....	1208 Burt Bldg.	San Francisco .....	1040 Rialto Bldg.
Houston .....	2919 Main Street	Philadelphia .....	1619 "1700" Walnut St. Bldg.
Tulsa .....	1611 Thompson Bldg.	Detroit .....	1510 Lafayette Bldg.
New York .....	3113 Hudson Terminal Bldg.	Boston .....	1510 Consolidated Gas Bldg.
Cleveland .....	2216 Rockefeller Bldg.	Havana .....	Edificio Abreu 402

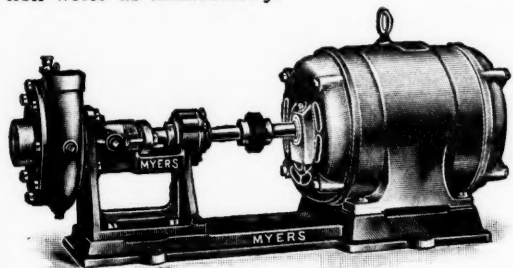
Plants at Birmingham, Chicago and Greenville, Pa.



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Again Myers engineers have triumphed in the development and introduction of Myers Centrifugal Pumps. Precision, balance and smoothness of operation are matters of record. High efficiency and absolute dependability are thoroughly established. Performance has been outstanding. Users everywhere report complete satisfaction. This briefly, is the answer to the success of Myers Centrifugal Pumps and their rapid acceptance by industry and agriculture the country over.

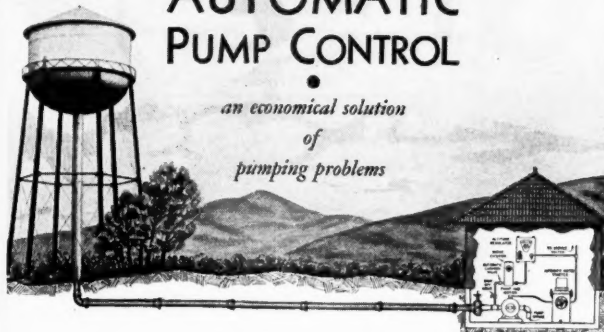
Our new Centrifugal Pump Catalog, No. CT34, is complete with illustrations and descriptions of the different styles and sizes in which Myers Centrifugal Pumps are now built. If you have not received a copy and desire detailed information write us immediately.



**THE F. E. MYERS & BRO. CO.**  
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## EC&M AUTOMATIC PUMP CONTROL

*an economical solution  
of  
pumping problems*



The EC&M System of Automatic Pump Control is of extreme importance to the engineer or water works official in the solution of pumping problems involving close regulation of tank-levels or pressures. Through the use of this ultra-sensitive and accurate control, one or more pumps can be automatically started and stopped so as to maintain levels or pressures within extremely close range of the maximum working valve of a system. As illustrated above, it is not necessary to run pilot lines or control wires from the tank to the pump house. Let us send you complete information.

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Gentlemen:

Please send me Bulletin 1100-A describing EC&M Automatic Pump Control for use with.....Volts (a.c. or d.c.) motors.

Name ..... Company .....

Address ..... M. E. 3-34



## Interesting Facts

(Continued from page 48)

infirmity may be employed on light work at a wage below the minimum established by a code. Permission to pay the lower wage to handicapped workers must be obtained by the employer from the State authority, designated by the Department of Labor, and the employer shall file monthly with the Code authority a list of all such persons employed, wages paid and maximum hours of work.

Less than one-third of the meat consumed in the South is home raised. There is opportunity for the establishment of more meat packing and meat processing plants to supply its needs and diversify its industrial productive capacity.

The proposed Bear Creek Cut-Off canal to connect the Tennessee and Tombigbee rivers would shorten the water route from Muscle Shoals to Mobile by about 1,000 miles and reduce the water route to the Gulf of Mexico by about 600 miles. The project not only would provide an improved waterway but aid in flood control of the Tennessee and Mississippi rivers by diverting part of the flood waters of the Tennessee to the Tombigbee River.

The Mississippi General Assembly would open to homesteaders thousands of idle acres that have reverted to the State through non-payment of taxes. The plan is to restore the lands to cultivation and to tax rolls in three years.

Mississippi flood control is to be left in the hands of the Mississippi River Commission and the corps of engineers now in charge of the work is the assurance given to Senator Stephens by President Roosevelt.

Less than one-fourth of the \$250,000,000 appropriated by the Federal Government for 10-cent loans on cotton was expended. When the money was assured, the market advanced and private capital found it safe to make the investment. Only \$58,000,000 was actually advanced.

The NRA, since its organization last June, has been allotted \$6,000,000 for administrative expenses.

The South has 3,470,000 farms, or 55 per cent of all the farms in the country. Exclusive of individual farm lighting installations, on December 31, 1933, more than 119,000 Southern farms were served by the electric light and power industry. Much progress has been made in rural electrification in the past few years.

Southern textile mills added more productive machinery in 1933 than in any year since 1930. In January spindle activity was over 98 per cent of capacity on a single shift basis and February operation has been maintained at about the same rate.

Judge McMahon of Cleveland, in an injunction against a union to discontinue its strike activities, ruled that a labor union cannot force a closed shop on a firm when all the workers in a craft are not members of a union.

Federal judges in two Texas districts have ruled that N.R.A. regulations cannot constitutionally be applied to wages and prices in industries conducted entirely within the State.

Employment in manufacturing plants is 22 per cent above last year and payrolls show a gain of 38 per cent.

Forest conservation rules to be put into effect June 1 under the code of the lumber industry will affect about one-fifth of the land area of the United States and 10,000,000 of its citizens. Coming under the rules will be 350,000,000 acres of commercially-owned timber lands, 150,000,000 acres of such lands held by the Federal and State governments, and 125,000,000 acres of farm wood lands.

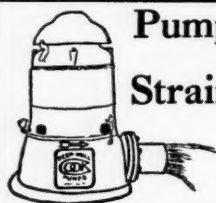
## GLAMORGAN PIPE & FOUNDRY CO. GENERAL FOUNDERS AND MACHINISTS LYNCHBURG, VA.

Manufacturers of  
Cast Iron Pipe and Fittings  
For Water and Gas Service

## STEEL PLATE CONSTRUCTION TANKS STACKS DREDGE PIPE

Acid Tanks	Digestors	Jacketed Tanks	Settling Tanks
Breechings	Dryers	Molasses Tanks	Standpipes
Condensers	Filters	Oil Storage Tanks	Still
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LANCASTER IRON WORKS  
LANCASTER, PA.



Pumps—Deep-Well Plunger and  
Turbine  
Strainers—and other well supplies

WATER PRESSURE SYSTEMS  
A. D. COOK, INC.  
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## WATER FILTERS

Pressure and Gravity type for Municipal Water Supplies, Rayon Manufacturing Plants, Textile Finishing Establishments, Raw Water Ice Plants, Laundries, Etc.

ROBERTS FILTER MANUFACTURING COMPANY  
604 Columbia Avenue  
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## Water Purification Plants

Any Type—Any Purpose—Any Capacity

Dry Chemical Feed Machines  
Swimming Pool Filters

E. W. BACHARACH & CO.  
Rialto Bldg.  
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## SAND PUMPS

A wide range of  
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For belt drive and for direct  
connection to motor

Illustrated booklet on  
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# MOUNT AIRY GRANITE

THE NORTH CAROLINA  
GRANITE CORP'N.  
Mount Airy, N. C.

POLES  
TIES  
POSTS  
PILING  
CROSS  
ARMS  
CROSS  
TIES  
LUMBER

## REDUCE UPKEEP COSTS WITH PRESERVED LUMBER

The ever-present menace of decay, dry rot and termite attack costs industry millions of dollars in destroyed lumber and property. You can remove this danger easily by using only pressure-preserved woods, ZMA or Creosote treated by Eppinger & Russell Co. It will pay you to consult with our engineers.

PRESSURE TREATING PLANTS  
Jacksonville, Fla.—Long Island City, N. Y.

WOOD PRESERVERS SINCE 1878  
**EPPINGER & RUSSELL CO.**  
84 Eighth Ave., NEW YORK CITY



## CREOSOTED TIES, PILING, POLES, POSTS, CROSS ARMS, and LUMBER

WOLMANIZED LUMBER—

Decay and Termite Proof—Can Be Painted

Docks for Ocean Vessels

American Creosote Works, Inc.  
New Orleans, La.

Atlantic Creosoting Co., Inc.  
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Plants at: New Orleans; Winnfield, La.; Louisville, Miss.;  
Savannah, Ga.; Jackson, Tenn., and Norfolk, Va.



## QUALITY

Motor Trucks, Buses, Trailers

SINCE 1910

The Corbitt Co.  
Henderson, N. C.

The South's Largest  
Truck Builder



## FATHERS WHO CARE don't want their sons to pay for worn out structures...



Present emergency construction work will be paid for, in part, by the future generation. Since we are certain to

leave a legacy of debt, common decency demands that we also leave something more than that. At least, we ought to make sure that the improvements for which we cannot fully pay are usable by those who finish the obligation. That means the careful selection of quality material in emergency construction today. AmCreCo products are particularly deserving of preference because of their long record of dependable service.

Why  
AMCRECO PRODUCTS  
have maximum quality

1. Carefully selected timber.
2. Incipient decay avoided.
3. Framing before treatment.
4. Preservative of known value.
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**AMCRECO  
PRODUCTS**  
will still be good when today's boys  
finish paying for them

AMERICAN CREOSOTING COMPANY

COLONIAL  
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INCORPORATED



GEORGIA  
CREOSOTING  
COMPANY  
INCORPORATED

LOUISVILLE — KENTUCKY



# INDUSTRIAL NEWS

## Heavy Machinery Manufacturing Plant Offered

Fully equipped for the manufacture of heavy machinery, the plant of Street Brothers Machine Works, Chattanooga, Tenn., is offered for sale by S. L. Perry, trustee, 416 Times Building, Chattanooga. It has been engaged for more than 25 years in the production of contractors' and excavating equipment, hoists, derricks, cable-way and dragline machinery, grinding and corrugating flour-mill and clay rolls, and is ready to operate immediately. The property contains about 60,000 square feet of ground with railroad trackage. Buildings are of steel and concrete, the machine shop being 81 feet by 138 feet, with connected black-smith shop, tool room and pattern storage. In the main shop there is a 15-ton electric traveling crane and auxiliary cranes, while other equipment includes machine tools, drawings, patterns, jigs, etc. Also on hand are finished machines, machine units and parts, raw materials, gears and supplies, with office and drafting room equipment and furniture. Bids for the entire property or sub-divisions of the schedule, at private sale, will be received by the trustee, subject to approval of the court.

## Ingersoll-Rand Buys G E Turbo-Blower Business

The Ingersoll-Rand Company, reports the purchase of the turbo-blower business of General Electric Company and will consolidate it with its own turbo-blower department. Equipment previously employed by General Electric is moved to the Ingersoll-Rand plant at Phillipsburg, N. J., where blowers and centrifugal compressors will be manufactured for the widest possible variety of uses. For many years Ingersoll-Rand has manufactured blowers of medium and large capacities, for pressures ranging up to 100 pounds, while General Electric specialized in both single and multi-stage units for a variety of services in low and medium pressures. The complete line of blowers now offered by Ingersoll-Rand, which also secures exclusive license under the various General Electric patents, includes low pressure units for aeration of sewage, ventilating and air conditioning systems, blowing cupolas, atomizing oil furnaces, furnishing agitation air for flotation work, for raw water ice systems, operating pneumatic conveying systems, and developing pressures and vacuums in handling manufactured gas. Medium-pressure machines cover the field for blast furnace and converter blowing and for gas booster work. Sales will be handled at Ingersoll-Rand Company's general office at 11 Broadway, New York.

## Carbon-Black Plant Increases Capacity

To provide the necessary power for an increase in capacity of its carbon-black manufacturing plant, the J. M. Huber Company, Borger, Texas, recently purchased from the Meriam Company, of Cleveland, Ohio, a 350-horsepower rebuilt gas engine, making the fourth repeat order for these large gas engines placed by the Huber organization with the Meriam Company. Other Meriam products used in the Huber company's plants include more than 400 Meriam Manometers to accurately measure pressure and flow of the natural gas from which carbon-black is produced.

## Orders For Youngstown Sheet

Substantial orders for shaped sheets and bars have been placed by the Pennsylvania Railroad with the Youngstown Sheet and Tube Company, of Youngstown, Ohio. The sheets and bars are for use in construction of new freight cars, it is announced, and represent part of the purchases of the Pennsylvania Railroad in connection with its large rehabilitation program.

In conjunction with its universal plate mill at Indiana Harbor, Ind., the Youngstown Sheet and Tube Company, Youngstown, Ohio, is installing a Steckel mill for the production of coiled strips for cold rolling into tin plate, according to Frank Purnell, president. In this type mill, hot steel is passed back and forth through rolls and coiled within furnaces upon opposite sides of the rolls, reducing the thickness of the

steel from an inch or more to approximately one-tenth of an inch. Electrical and other equipment has been purchased, it is announced. The cost of the installation will be about \$200,000.

## Heads Kentucky Rock Asphalt Company

Elected by the board of directors of the Kentucky Rock Asphalt Company, Louisville, Ky., as president of the company to succeed W. H. Tarvin, resigned, Col. Dan. D. Thompson, well known in Chicago investment circles, returns to Louisville, his native city, to assume the responsibilities of his new position. Although he has not been directly connected with highway paving activities, he is well known in highway construction circles through connections with kindred interests.

## Marsh Corporation Representative

The Jas. P. Marsh Corporation, Chicago, announces the appointment of J. M. Kane, P. O. Box 1552, Fort Worth, Tex., as sales representative for the company's line of gauges, instruments, valves and vents.

(Continued on page 54)

**Why —**  
*are so many people*  
*visiting*  
**FLORIDA**  
*this season?*

*There's a reason --*  
*Come and see for yourself*

*For tourist or agricul-*  
*tural literature of the*  
*East Coast of Florida,*  
*Write*

**Model Land Company**

*Flagler System*

**St. Augustine—Florida**



## A Complete Organization

Quick shipments via rail,  
truck, barge or scow from  
Baltimore, Md., and North  
East, Md.

### **SAND** *Washed* **GRAVEL** *And* **SLAG**

*We Produce in Quantities to  
Meet Your Requirements*

. . . . . with years of  
experience in successfully executing large  
construction contracts of various kinds is  
prepared to undertake the construction of

CONCRETE, MASONRY AND EARTH  
DAMS . . . DRY DOCKS . . . RIVER AND  
HARBOR IMPROVEMENTS . . . WATER-  
WAYS . . . DEEPENING CHANNELS . . .  
DREDGING OF ALL KINDS . . .  
HYDRAULIC FILLING AND ROCK  
WORK . . . SEWERS . . . TUNNELS . . .  
RAILROAD CONSTRUCTION . . . . .

## **The Arundel Corporation**

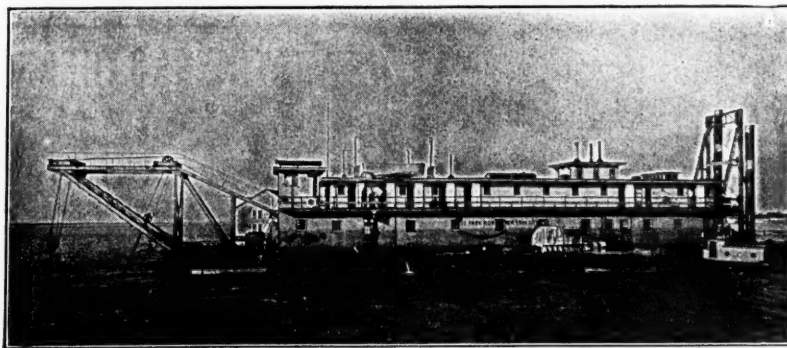
Main Office: ARUNDEL BLDG., Pier 2, Pratt Street

**Baltimore . . . . . Maryland**

BRANCHES: NEW YORK CITY—NORFOLK, VA.—MIAMI, FLORIDA

## DREDGING

FILLING, LAND RECLAMATION, CANALS, PORT WORKS  
RIVER AND HARBOR IMPROVEMENTS—DEEP WATERWAYS AND SHIP CHANNELS



**We are especially equipped to execute all kinds of dredging,  
reclamation and port works in Southern waters.**

**Correspondence invited from corporate  
and private interests everywhere.**

*Contractors to the Federal Government*

## **ATLANTIC GULF AND PACIFIC CO.**

NEW YORK: 15 Park Row

HOUSTON, TEXAS: Scanlan Building



## INDUSTRIAL NEWS

(Continued from page 52)

### C. R. Messinger Resumes Presidency Chain Belt Co.

C. R. Messinger, chairman of the board, Chain Belt Company, Milwaukee, Wis., has resumed the presidency of the company following the death of his brother Clifford F. Messinger, in December. Announcement is also made of the completion of the transfer to Milwaukee of all the manufacturing operations of the Stearns Conveyor Company of Cleveland, its wholly owned subsidiary. Major products manufactured by the Chain Belt Company are Rex Chain; Rex Concrete Mixers; Rex Sprockets; Rex Traveling Water Screens; Rex Elevators; Rex Pumps; and Rex Conveyors. Equipment developed by the company has played an important part in Mississippi River development projects and other national construction jobs in recent years.

### Aluminum Cable For TVA Transmission Line

The Tennessee Valley Authority recently awarded contract to the Aluminum Company of America, Pittsburgh, Pa., for 678 miles of electrical conductor for the transmission line to connect Cove Creek hydroelectric development now under construction near Knoxville, Tenn., with the existing Government power development at Muscle Shoals, Ala. The cable is of the steel reinforced type, comprising in this case 33 aluminum strands over a solid steel core. In addition to steel required, about 2,140,000 pounds of aluminum will be used.

### Robins Acquires Mead-Morrison

The coal and ore handling business of the Mead-Morrison Manufacturing Company, of

Boston, has been acquired by the Robins Conveying Belt Company, of New York City, and will be operated henceforth as the Mead-Morrison Division of Robins Conveying Belt Company. This consolidation gives to the Robins company a complete line of material handling machinery, including Mead-Morrison unloading towers, stockig and reclaiming bridges, pivoted bucket carriers, cableways, and car and barge hauling equipment, in addition to Robins belt conveyors, crushers, screens, skip hoists, etc.

**Stainless Steels.**—Under the title of "USS Stainless and Heat Resisting Steels," the Committee on Stainless and Heat Resisting Steels of the Subsidiary Manufacturing Companies of the United States Steel Corporation, New York, has prepared and published a treatise which should be of value and interest to buyers and users of these products. It is presented in a booklet, illustrated and unusually attractive, which may be obtained from the following subsidiary manufacturing companies of United States Steel Corporation: American Sheet and Tin Plate Company, Pittsburgh, Pa., sheets and light plates; American Steel and Wire Company, Chicago, cold rolled strip, wire and wire products; Carnegie Steel Company, Pittsburgh, and Illinois Steel Company, Chicago, bars, plates, special sections and semi-finished products; National Tube Company, Pittsburgh, pipe and tubular products.

### "Caterpillar" Diesel Thirty-Five Tractor.

—This machine is illustrated and described in a new 44-page catalog issued by the Caterpillar Tractor Company, Peoria, Ill., which presents large model pictures and action photographs with complete descriptive details of the tractor and Diesel engine.

**Super-DeLavaud Cast Iron Pipe.**—Under the de Lavaud patented process for centrifugal casting, the United States Pipe and Foundry Company, Burlington, N. J., has made and sold more than 80,000,000 feet of cast iron pipe between 1922 and 1932. Recently it completed a new Super-DeLavaud pipe unit at its Bessemer, Ala., plant. In 1932, the company began the production of a **super** cast iron pipe centrifugally cast without chill in a metal mold. This product is briefly described in an illustrated booklet being distributed by the company.

**Canning Machinery and Supplies.**—A. K. Robbins and Company, Inc., Baltimore, Md., have issued a new general catalogue on canning machinery and canners' supplies for canning fruits, vegetables, sea foods, citrus fruits, etc. This company, which has been in business more than 50 years, operates a machine shop at its Baltimore plant and a machine shop and foundry at Cardiff, Maryland, about 35 miles from Baltimore.

### Texsteel Sheaves For Texrope Drives.

Leaflet No. 2134-A, presenting engineering data, such as sheave diameters, number of grooves, bores and other dimensions on Texsteel Sheaves for Texrope Drives, has been issued by the Allis-Chalmers Manufacturing Company, Milwaukee, Wis. Texsteel Sheaves are a new product of Allis-Chalmers, pressed from steel for lower cost and lighter weight.

**"Operators Hand Book."**—The B. F. Goodrich Rubber Company, Akron, Ohio, has issued a 40-page handbook on truck and bus tires. It lists all Goodrich tires for trucks and buses, gives specifications and describes proper tires for various uses.

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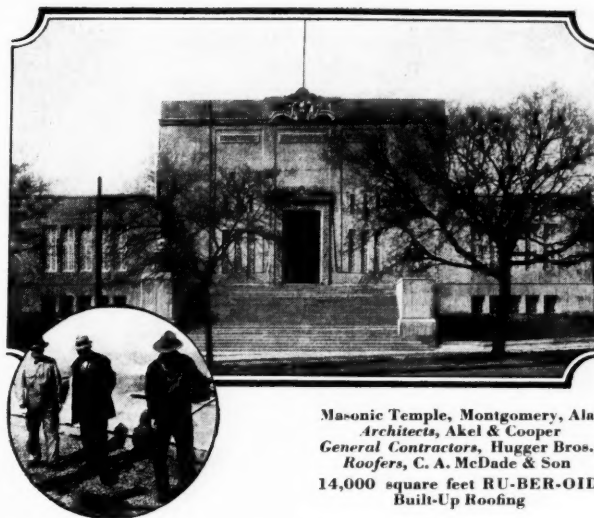
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## 1. MOISTURE AND ACID PROOF

Tornesit, a chlorinated rubber, is valuable in the preparation of paints to protect against corrosion by moisture, acids, and alkalis. It is soluble in cheap hydrocarbon solvents, is miscible with many gums and plasticizers, and adheres strongly to steel.

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Try Dipentene No. 122 as a portion of the solvent in enamels, undercoats, wall paints, marine varnishes, aluminum paints, baking enamels, paint and varnish removers, and generally where a strong solvent is desired, especially as an anti-skinning agent in synthetic resin finishes.

## 3. FOR CABLE COMPOUNDS

Commercial Abietic Acid is free from many resin impurities. It is intermediate in purity between resin and pure abietic acid.

## 4. NEW DRY ROSIN SIZE

A new size has been developed for paper use which is dry, porous, free-flowing, free from uncombined alkalis, quickly and completely soluble, can be added directly to the beaters, increases sizing efficiency.

## 5. NEW BLASTING AID

An enclosed fuse that burns without producing gas has been perfected for use in metal delay electric blasting caps, which are used to fire successive rounds of holes in a blast at accurately timed intervals. This gasless fuse eliminates the necessity for gas vents in the metal shell which in other types allow moisture to enter and sometimes cause premature explosions.

## 6. RECLAIMING RUBBER

Solvenol is an excellent solvent and devulcanizer for rubber; it also dissolves resins that are only slightly soluble in turpentine.

## 7. AID TO STEAM LAUNDERING

Daintex whitens whiter, brightens colors, removes more dirt, promotes free rinsing, does not affect tensile strength, leaves a pleasant fragrance, makes fabrics feel softer, permits shorter sudsing, is no more expensive than other products.

## 8. IMPROVED HAND SOAP

Pine oil is now used in both liquid and solid soaps. It imparts a pleasant piney odor, relieves chapped hands, sores and minor cuts, and adds to the cleansing properties of the soap.

## 9. NEW EXPERIMENT STATION

The new Hercules Experiment Station is adequately staffed and equipped to do research work on the problems of customers and potential users of Hercules chemical materials.

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IN-10M

## The Black Art

(Continued from page 25)

the well mouth to 300 lbs., and it is further reduced at the plant to 115 lbs. When the gas is exhausted from the pumps it is at 15 lbs. pressure and is used at the furnaces at this pressure. Gas used in the furnace direct from the wells is reduced to 15 lbs. pressure also.

The Thermatomic process utilizes a furnace similar to the superheater of a water gas machine and consists of a steel cylindrical shell lined with firebrick and filled with checker brick. Dome shaped it is 14 ft. in diameter, and 25 feet high. Alternate streams of heating gas and gas to be dissociated are blasted through the furnace, from opposite directions, on five minute cycles each. First the checkers are heated by blasting air and heating gas up through the furnace and out the stack and at the end of the period this blast is turned off and the stack lid closed. Natural gas is then blasted down through the hot checkers from the top and the dissociated hydrogen gas with half the carbon black in suspension is forced out, through a duct near the bottom, into a vertical cooling chamber with atomized water sprays. The incoming hot hydrogen flashes the water into steam, and the cooled smoke with the carbon in suspension is forced into a dust collector where a separation is made. The collector consists of a vertical frame 12 ft. long and 5 ft. square holding 24 bags, each 9 in. in diameter. The carbon is deposited on the walls of these bags while the gas passes through. A pneumatic pump thumps the frame intermittently which causes the carbon black to fall off into a screw conveyor which takes it to an air flotation and screening process and then to the packing hoppers, and packers of the standard floor mill type. One screw serves the collectors of the entire 8 sets.

The temperature varies from 900 to 1400 deg. C and the carbon black that is originally deposited on the checkers during the dissociation run (about half) is burned during the heating up period. There are 16 of these furnaces divided into 8 sets, each set consisting of two furnaces with two coolers between and the coolers discharge into a single collector. The capacity of the plant is 65,000 lbs. of carbon black a day.

Each furnace is heated with four gas burners of the Bunsen type, each burner consisting of an 8 in. pipe enclosing a 3/4 in. pipe. Air is forced into the larger pipe at 8 in. water pressure and gas into the smaller at half that pressure and they burn in a long flame directed up through the checkers. Each burner has a capacity for 7,000 cu. ft. of gas per hour.

Approximately 77% of the carbon

black produced is now utilized in the rubber tire industry, 11% in inks, principally printers' ink, 7% in paints and the rest miscellaneously. Exports amount to roughly 25% while the balance is used in the United States.

Some of the hydrogen gas is burned as fuel under the boilers in the power plant which consists of several steam boilers and steam engine driven generators. The electricity thus produced is used to light the plant, to operate the motors and in various other ways.

## The Condition of Southern Manufacturing Under N. R. A.

(Continued from page 21)

Va.) Chamber of Commerce, commenting on the situation, says "there is a feeling of hopefulness here and yet also a feeling of uncertainty as to what will happen when the C.W.A. workers are completely demobilized. It is not felt that industry will be able to provide all of them with employment."

Over the South as in other sections of the country, the prohibition against installation of new productive capacity in some industries has retarded construction development. Despite this, many new industries are starting in the South and many plants have been completed in recent months.

## Unpopular Facts

Referring to Representative Zimmerman's declaration in the South Carolina House of Representatives that "the C. W. A. has ruined farm labor in South Carolina," and his recommendation to petition the Federal Government to abolish direct relief in the State and to reduce the wage scale on Federal relief projects for "the people more and more are getting the idea that the Government must take care of them," the Charleston News and Courier makes this comment:

"Opinions and assertions of the sort are unpopular; in fact, there are many who try to impress that such sayings are unpatriotic. \* \* \*

"It seems to be a waste of energy to warn the public that it must pay, and pay through the nose, for the freshet flow of dollars out of public treasuries. Individualism dares not oppose too strongly; it is in danger of being mauled and bruised. Yes, 'this thing must stop some time,' but it looks as if all the land will be immersed in relief debts by that time. Man has not yet produced water from stones nor blood from beets."

## Direct and Alternating Current Motors.—

The Louis Allis Company, Milwaukee, Wis., manufacturers of direct and alternating current motors, announces the publication of an 8-page bulletin (No. 505-C) showing detailed construction of their motors and illustrating and describing characteristics and uses of various types.



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**DROUGHT STORMS**  
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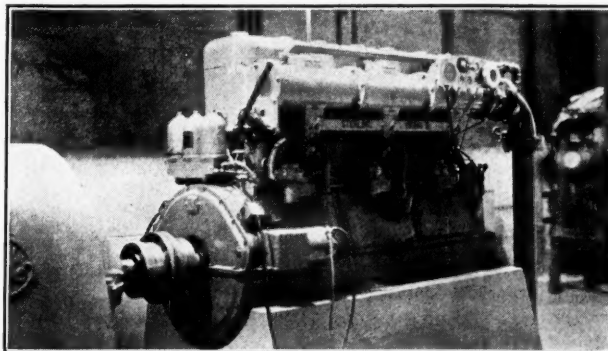
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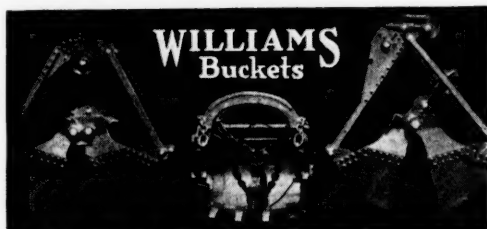
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# WATER WORKS IMPROVEMENTS

**M**ODERNIZATION and expansion of water works in growing Southern cities will be required on an extensive scale since many have delayed making adequate improvements that should have been started in the past few years. Some cities have gone ahead with the work despite the depression and they have been able to secure these needed public improvements at a relatively low cost. Many have taken advantage of P.W.A. loans and much work of this kind is under way in the South.

In this connection, an interesting water works improvement program has been carried out and is now nearing completion by the City of Macon, Ga. Some months ago, the Board of Water Commissioners, comprising C. H. Hunnicutt, Cliff T. Williams and Jesse T. Mitchell, launched a plan for the gradual modernization of the River Pumping Plant. Last October saw the fulfillment of some of these plans when contracts were let for the construction of the plant and there has been placed in commission a mechanical mixing plant with basins, chemical house and laboratory, and certain alterations made in the existing sedimentation basins.

In the accompanying view, as seen across the sedimentation basins, the building in the foreground houses the laboratory, chemical mixing machines and electrical remote control for the low-lift raw water pump and meter for measuring the raw water from the low-lift pumping unit.

The interior view shows a 10,000,000 gallon per day DeLaval steam turbine-driven clear water pumping unit with Westinghouse 125 KW direct current

## Macon Water Works

New pumping plant, laboratory and chemical house and 10,000,000 gallon pumping unit.

generator. This unusual pumping unit supplies the City of Macon with water for two different pressure systems; one system operating for lower levels, utilizing the pressure at 100 pounds and the higher section of the city being supplied with water at 150 pounds pressure. This type of unit not only eliminates the multiplicity of pumps and turbines, but it permits of more economical operation as regards power needed to pump the water. The electric generator shown on the end of the unit supplies current to a motor-driven pump for handling the raw water from the River Pumping Station, as well as current for lighting and operating auxiliary motors about the plant.

The City of Macon is now installing a duplicate steam turbine-driven pumping unit, and is also building a battery of sand filters of the most advanced design.

This work is being done by Burford, Hall and Smith of Atlanta, power plants and power plant equipment pumping machinery engineers, and Taylor Iron Works, Macon, under supervision of Wiedeman & Singleton, consulting engineers, Atlanta, and T. E. P. Woodward, Macon, field engineer. The general contract was awarded to R. A. Bowen, Macon; the filter equipment contract to Taylor Iron Works, and the steam turbine-driven centrifugal pump was supplied by the DeLaval Steam Turbine Company, Trenton, N. J.

## A Leading Spinning Mill

At the annual meeting of the Standard-Coosa-Thatcher Company of Chattanooga, Tenn., the following officers were elected: J. S. Verlenden, Chairman of Board, R. C. Thatcher, President, R.

J. Mathewson, Vice President, A. H. Thatcher, Treasurer, Shannon M. Gamble, Assistant Treasurer, F. R. Harris, Secretary.

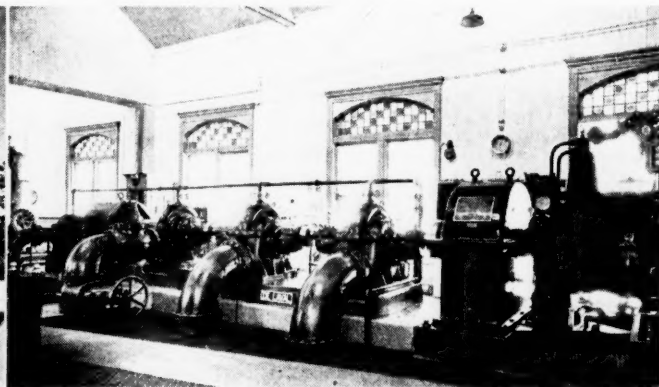
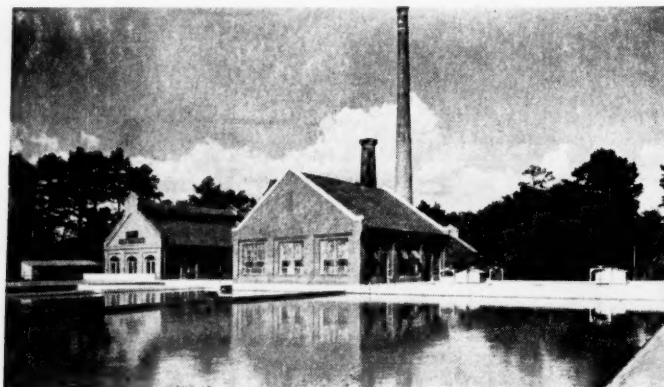
This calls attention to one of the outstanding enterprises of the South, a company that has mills at Chattanooga, Rossville, Ga., Piedmont and Gadsden, Ala. Its history goes back to the establishment of the Coosa Manufacturing Company of Piedmont in 1891. From this beginning there was later developed the Standard Processing Company, located at Chattanooga in 1912, and in 1915 the Thatcher Spinning Company was organized at Chattanooga. There followed the consolidation of these three companies in 1922. Still later the National Yarn and Processing Company was merged, their plant being at Rossville, Georgia. This was in 1929 and two years later the Sauquoit Spinning Mill of Gadsden was acquired.

The three spinning mills have a combined spindleage of 140,000, and in addition there are two processing and finishing plants for yarn thread. Sales are largely to the knitting trade of carded, combed and mercerized yarn, besides yarns for weaving, and to the cutting up trades, threads for sewing.

The company's financial statement reflects a strong cash position, and current assets compared to liabilities of more than six to one.

It is an interesting example of the growth of an enterprise throughout the years that has been due to individual initiative and careful management. In its special products its success has been notable. The company reflects credit upon Chattanooga and the entire South.

Mass production of low-priced homes, designed to facilitate and direct the expenditure of \$30,000,000,000 of private funds in ten years is said to be the object of a long range study of mass housing by the Administration. One estimate indicates that 50,000,000 Americans are living in inadequate or improper homes and that there is a housing shortage of between 200,000 and 300,000 family units.





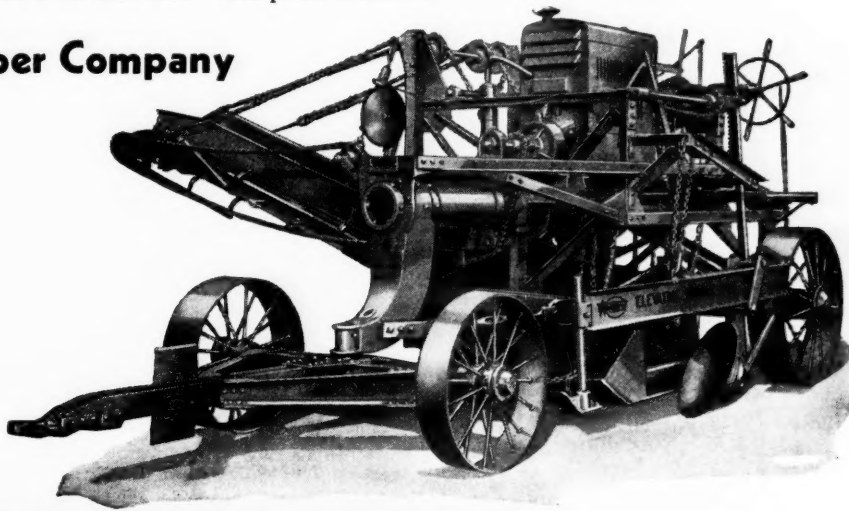
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the toughest gravel roadbed. The plow of the No. 6 easily enters ground so hard it cannot be entered by a loose-hung plow. This is only one of the many features which insure a big yardage when a Western No. 6 is on the job. Write for Catalog 31-CM for complete details.

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*The Western No. 6 Elevating Grader. Notice the tubular frame, stiff-leg plow control, three-point suspension, automatic belt tightener, motor driven belt and one-piece elevator.*



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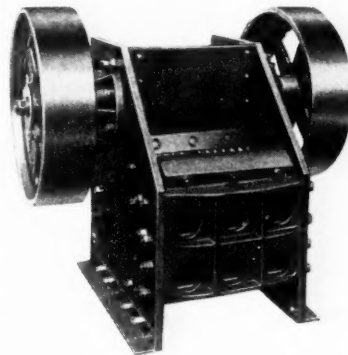
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# ECONOMIC IMPROVEMENTS IN FACTORY POWER PLANTS

## An Analysis of Twelve Typical Surveys

By

R. L. Baker

Vice Pres.—E. M. Gilbert Engineering Corporation, Reading, Pa.

**D**URING the past few years the general sufficiency for the time being, of steam and power plant capacity in public utilities and in large industrial operations, has diverted the engineering activity of organizations doing this class of work from the problems of economical construction to those of more economical operation of power installations, especially in factory plants, where the cost of steam power is now receiving very much more refined attention than was formerly the case.

Typical of this situation is the experience of the E. M. Gilbert Engineering Corporation (formerly W. S. Barstow & Co.) in making engineering surveys and reports on the power situations of numerous manufacturers.

During the 18 months from January 1932 to July 1933 the engineers of this organization conducted 124 surveys for factory plants. Nearly one-quarter of these surveys were undertaken to assist certain power utility customers, who, though satisfied with the service, needed assistance with their steam and power problems.

These surveys covered a wide variety of plant capacities and types of operations. The operating savings found possible ranged from \$15,000 and \$20,000 down to less than \$1,000 per year. One of the surveys was made on a large roofing paper mill and showed that through the replacement of certain steam drives by electric drives, removing certain high pressure steam pipe lines, shutting down boilers when the factory is idle in the non-heating season, and removing about 25% excess heating surface from the factory heating system, the customer could save about \$9,000 per year in factory operating expense.

In a large mill in the tool steel industry, an engineering survey determined the economic advantages of completely shutting down an oversized steam boiler plant of about 1700 H.P., (built during the war and hitherto used mainly

to supply steam-hammer service) and of substituting air instead of steam for hammer operation; utilizing a small oil-fired boiler, centrally located, for the production of the small amount of steam needed for building heating and for pickling tanks. The economic showing of this survey was so convincing that the management followed all the engineers' recommendations, carried out all the suggested changes, completely eliminated the use of high pressure steam in the mill, and reduced out-of-pocket expense over \$20,000 per year.

A survey of the boiler installation of a factory making gypsum products, showed how an investment aggregating about \$16,000, covering 6 different steam plant improvements, could repay itself in one year, out of savings.

In a glass factory using a large amount of cooling water drawn from the city water system, the plant owners were shown how a saving of about \$5,300 per year could result from an investment of about \$4,800 in a cooling tower.

A survey made of a silk mill showed that certain recommended improvements in boiler operation, the saving of condensate hitherto wasted, the installation of a heat exchanger, and providing electric demand meters and power factor correction, would together save nearly \$3,000 per year in the whole plant.

In the case of a large malleable iron foundry, a survey was made to ascertain where improvements could be effected in the generation and use of compressed air, and in the pulverizing and burning of coal, also the diversifying of maximum power demand and improvement in power factor. The engineers' recommendations covered stoppage of leaks in the compressed air piping, repairing air intake ducts, the speeding up of one air compressor and cutting down the capacity of another to secure more economical loading. The power consumption and cost per ton for pulverizing and conveying coal were determined; air preheaters were proposed for reclaiming furnace heat hitherto wasted, and off-peak operation of the

coal preparation plant was put into effect so as to cut down electric power demand charges.

The owners of another foundry plant were shown how they could save about \$5,000 per year out of the total steam and electric power expense of \$18,000, by making simple changes in their operating method.

A survey made of a brewery during its rehabilitation in the spring of 1933, showed that by converting to electric drive certain of the old steam driven compressors and other brewery equipment, and substituting a motor generator set for an engine-type generator formerly used, and using the boilers only for process steam generation at very low pressure, the operating expense for steam and power could be reduced by \$8,700 a year which would repay the total new investment of about \$7,000 for improved electric equipment within 10 months, and would obviate the necessity of renewing the boiler plant.

Several surveys were made of laundries. In one of these it was shown that about \$1 per ton on 400 to 500 tons of coal per year could be saved by changing the grade of coal; that appreciable savings could be made by applying suitable heat insulating materials to certain parts of the boilers and feed water heater; that if certain defective hot-water thermometers were replaced, closer regulation of the use of hot water and a corresponding fuel saving would result; and that a \$600 heat exchanger would repay its cost in two years.

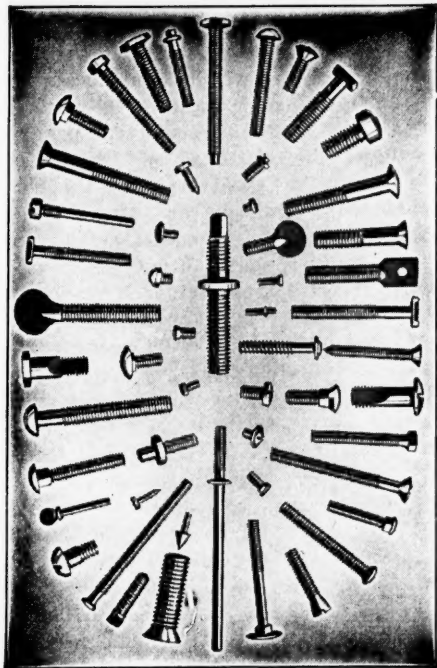
A survey for a chemical manufacturing plant disclosed that a simple re-connection of a multiple-effect distilled-water evaporator would bring about a daily saving of at least \$2.50 in fuel and relieve the overloaded boiler of 30 to 35 H.P. of load.

In a small factory making agricultural tools, and creating a quantity of wood waste fuel, a survey showed that, as there was enough of the wood waste to supply all the steam heating requirements for the factory during working hours, the coal consumption could be reduced to the amount required for nights and weekends. The survey included further recommendations for improving the storage and handling of the wood waste to avoid fire risk.

A survey was made of the operations of an oil refinery which involved an efficiency test of the boiler plant and metering of steam distribution to all the stills, filters and steam pumps and the delivery of electric power to the refrigerat-

(Continued on page 62)





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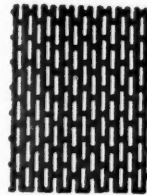
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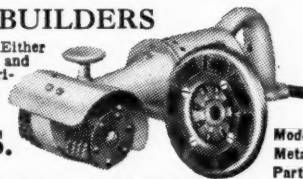
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# A COTTON HOUSE

## The First Demonstration Unit To Be Built This Spring On Long Island

**I**NCORPORATING a number of newly developed refinements in modern home construction, the first demonstration "cotton house" is to be erected early in April at Northport, Long Island, New York according to the Cotton-Textile Institute. Slightly more than a year ago, that organization startled architectural and building circles with the presentation of plans and specifications for utilizing ordinary cotton duck for covering the outside wall surfaces and roof of two types of dwellings, viz., a five-room home intended for permanent occupancy and the so-called "week-end" house.

It is the latter type, perched high on eight steel supports to give it superior elevation, that will be built this Spring. In the center of a four-acre plot, adjoining the new Northern State Parkway, which the Long Island State Parkway Commission is building to bring country recesses nearer to dwellers in the great metropolis, there is going to be erected what is believed to be the first home of its kind in the United States. Not only in point of building principles involved but in its general architectural treatment and colorful decoration will the house have significant interest.

Approximately 300 square yards of cotton duck will be required for the wall surfaces, a roof canopy and deck covering and for the curtain-like interior hangings that have been designed for insulation on the all-glass southern and western walls of the structure. By the skilful placing of collapsible canvas partitions which fold back against the wall when not in use, the almost wholly open floor area of the house can be broken up as needed into living, sleeping and dining spaces. An attractive single-unit spiral steel stairway is placed at the rear of the house, running to the roof, thereby leaving an unbroken ground area that provides parking space for two automobiles.

The North and East walls of the house will be covered with canvas, imbedded in white lead over insulated plywood sheathing, and to be painted blue to contrast with the bright orange colored awnings extending the full width of the South and West sides of the house. To take advantage of the flexibility of the canvas the 90 degree angles com-

monly found in the framework and at the joints of the walls and roof will be rounded.

This first demonstration cotton-house, because of its low construction cost, is expected to focus further interest in an ingenious new use for cotton with important potentialities remaining to be realized in the resumption of broad home-building activities.

## Economic Improvements in Factory Power Plants

(Continued from page 60)

ing plant and other electric drives. Besides developing certain operating yardsticks and reliable unit costs of steam and KW-hour consumption in the various sections of the refinery, which is very efficiently operated and maintained, the survey prompted certain suggestions for additional instruments in the boiler room, a different operation of boiler draft fans, and a few slight modifications in the operation of the refrigerating equipment. This was really a research survey rather than one to evaluate the cost of remedying defects, and it secured accurate operating data which were valuable to the refinery management.

The foregoing cases are typical of the outstanding usefulness, to both large and small industrial operations, of competent economic surveys of steam and power installations.

## \$2,750,000 Art Museum

**T**HE building housing the William Rockhill Nelson Gallery of Art, designed by Wight & Wight, is classical in style, yet reflects modern tendencies in its simplicity and in certain details. It is 390 by 175 feet, built of Indiana limestone and was constructed at an approximate cost, includ-

ing landscaping, of about \$2,750,000 by the Long Construction Co.

The Ionic order is used on the colonnades which form the central motifs of the four facades. Of particular interest are the 23 sculptured panels in low relief, designed by Charles Keck, of New York, and depicting the history of the exploration and settlement of the Middle West, and the great bronze doors of the south facade designed by Thomas Wight and Mr. Keck and telling the story of Hiawatha. The landscaping of the 20 acres of grounds was done by Hare & Hare, of Kansas City.

The interior is striking in its simplicity and perfection of proportions. The South vestibule is faced with a local marble, Kacimo, of cream and brown tonality, and the vaulting is decorated with murals by Leroy MacMorris. The Great Central Kirkwood Hall is faced with Biesanz travertine, has a floor of Italian travertine and twelve colossal black marble columns from the Pyrenees. The Corinthian capitals are of Mansoto and the smaller gray Ionic columns are from the quarries of St. Genevieve, Missouri. The inner open air Rozzelle court, of Renaissance design and with a double columned cloister, is of pink and yellow Mansoto. The fountain is of cipolino marble and comes from a Roman bath. The main stairway in the Atkins wing is faced with Sieneese marble and is panelled with a series of murals by Andrew T. Schwartz symbolizing the great periods of the development of Art.

All Galleries are lighted by artificial overhead light, a system designed by the General Electric Company and approximating a diffused daylight. The air for the entire building is drawn from the roof, washed through oil, given the correct degree of temperature and humidity, and then forced through the galleries by means of great fans.

To the left of the North facade entrance is a lounge-waiting room, while a smoking-lounge is situated on the South mezzanine floor East of the entrance. A similar comfortable lounge will be found adjacent to Oak Hall.

William Rockhill Nelson Gallery of Art,  
Kansas City, Mo.





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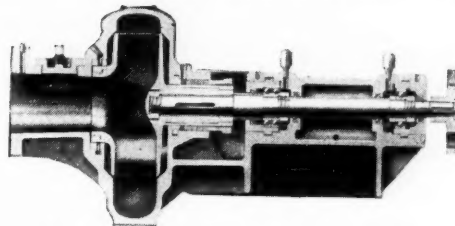


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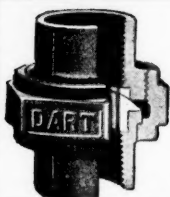
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# DEVELOPMENT POSSIBILITIES ALONG TENNESSEE AND TOMBIGBEE RIVERS

By  
**William L. Smith**

**T**HE Tennessee Valley, with abundant and cheap electric power, now offers a wide field for development of its great mineral resources and those of adjoining regions. With the opening of the Tennessee and Tombigbee waterways to the Gulf of Mexico by way of Mobile, the haul to deepwater for export of the raw materials and manufactures of the States of Tennessee, Georgia, Alabama and Mississippi would be greatly shortened.

## Coal Resources

The Tennessee and Tombigbee Rivers flow through the heart of the Plateau Coal field. After following along the east side of the great Tennessee coal fields, entering into the State of Alabama by cutting a channel through the Great Raccoon Mountain coal field, and paralleling the Raccoon and Cumberland coal field to Gunter'sville, Ala., then cutting through the Cumberland field to an estimated depth of 1,000 feet and from 5 to 10 miles wide, the Tennessee River follows the northern outcrop of the Plateau coal field. On the south the Tombigbee River cuts into the Warrior coal field which is estimated to have 23 seams of high grade coal. The Plateau field is known to have 8 seams of coal. It is estimated that there are several billions of tons of coal that will be open to development in this area.

## Iron Ore

It is believed that a large part of the coal fields is underlaid with the Clinton iron ore formation. Tests have shown in some places an ore depth from 9 to 17 feet. With this iron ore and the great brown ore deposits of Tennessee, Georgia, Alabama and Mississippi, it is reasonable to expect that the four States have immense ore reserves, probably half of the known iron ore of the country suitable for present day method of manufacturing.

Assuming that the report of the Lake

iron ores made in 1920, which gave the life of that field as 23½ years, is correct, half of that reserve is now gone and within the next 12 to 15 years the supply of iron ore for the Northern mills must come from the coal areas of the four States named and the waterways will play an important part in the future development. Steps now being taken to develop the Tennessee Valley and its tributary streams are in the right direction to take care of the future needs of the iron industry of this country.

Manganese ore outcrops along the foot of the coal field but the field has not been proven up. Samplings along the Tennessee Valley show the ore to be high grade. Murphrees Valley did produce a large tonnage of ore during the World War period. In the Raccoon coal field area are found in close proximity coking coal, limestone, manganese and iron ore which reduces the freight hauling of raw materials entering into the making of steel.

## Bauxite

Tennessee, Georgia, Alabama and Mississippi have large supplies of bauxite, and the development of cheap power will be inviting to the aluminum industry in the future. It is believed that the quantity in the Tennessee Valley is sufficient for many years and right at the power.

## Phosphate Rock

Tennessee has large deposits of high grade phosphate awaiting development. This new development should be inviting to the fertilizer industry for establishment of plants near Muscle Shoals. Leading into Mississippi are known outcroppings of phosphate which have been exposed by erosion. In Alabama along and near the Tombigbee River are large deposits of phosphate that can be made available with the opening of the Tombigbee River.

## Clays

There is an abundance of high grade kaolin and plastic clays all along the Tennessee Valley. In the Cumberland Mountains along Paint Rock River for several miles are reported outcroppings of gypsum but the extent and value of the deposits have not been proven.

Considering the mineral resources, the

power to be made available and the location of the streams from Knoxville to Mobile, advantages are offered for the fullest development of this region when adequate waterway facilities and complete canalization of connecting links are assured.

## New 110-Mile-an-Hour Passenger Train

Revolutionary changes in railroad transportation are under way. Never before has greater attention been given to improving equipment and service for the travelling public. Following the development of air-conditioning coaches and whole trains, greater progress is being made in developing fast lightweight units. The latest is the Union Pacific's new air conditioned, high speed, streamlined, three-car passenger train. It is a combination of the basic component parts of aeronautical, automobile and railroad designs that have been successfully tested in these fields. Only that it operates on wheels and rails does it resemble the conventional passenger train. It has the outward appearance of an elongated airplane fuselage on wheels and the glistening polish of an automobile. The contours of the cars and their low center of gravity allowing them to hug the rails gives the impression of strength and power. The cars which have a seating capacity of 116 persons, buffet space and baggage compartment, are of tubular, aluminum-alloy construction. The total length of the articulated train is 204 feet, 5 inches and its weight is practically the same as that of a standard Pullman car.

The train is powered by a 600 horse power, V-type internal combustion Winton engine using distillate as a fuel, and directly connected to a generator producing electricity for the two traction motors mounted on the axles of the front truck. It has a top speed of 110 miles an hour, or 90 miles an hour as a "cruising" speed, and is said to embody the most advanced safety features for rail transportation.

The train was built for the Union Pacific System by the Pullman Car & Manufacturing Corporation with the Winton Engine Corporation, a subsidiary of General Motors, and the Aluminum Company of America furnishing major equipment and materials used in its construction.



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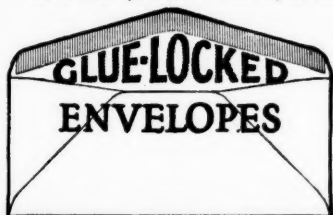
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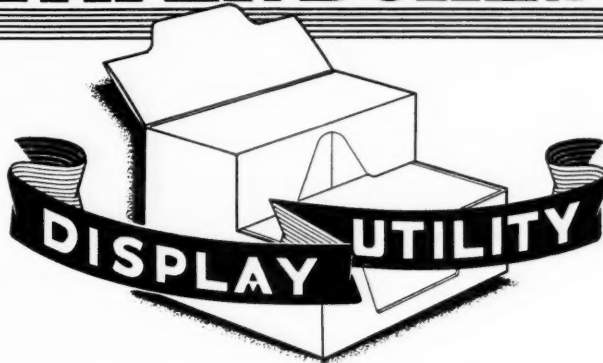
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By the Insurance Department.

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DECEMBER 31, 1933

Bonds Amortized, Stocks Valued on Convention Plan.	
Total income during the year	2,962,011.97
Total disbursements during the year	2,913,385.27
Total admitted assets	4,613,324.00

Total liabilities except capital (including Contingency Reserve \$229,278.51)	2,959,684.73
Capital actually paid up in cash \$1,000,000.00	
Surplus over all liabilities	653,639.27

Surplus as to policy holders	1,653,639.27
------------------------------	--------------

Total liabilities	\$4,613,324.00
Net premiums in United States December 31, 1933	\$4,606,321.08
Risks written in Maryland during 1933	\$233,021,876.00
Premium on Maryland business in 1933	167,880.18
Losses paid in Maryland in 1933	60,927.71
Losses incurred in Maryland in 1933	61,803.71

### STATE OF MARYLAND

Office of the  
STATE INSURANCE DEPARTMENT  
Baltimore, Md., Feb. 23, 1934.

I hereby Certify, That the above is a true abstract, taken from the Annual Statement of the FIDELITY AND GUARANTY FIRE CORP., BALTIMORE, MD., for the year ending December 31, 1933, now on file in this Department.

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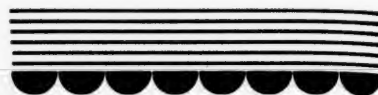
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## Annual Meeting of Southern Pine Association

The 19th Annual Meeting of the Southern Pine Association will be held in New Orleans April 4 and 5, 1934, in conjunction with Code conferences covering the entire Southern pine lumber industry, announces H. C. Berckes, secretary-manager of the Association. Formal notice of the joint annual meeting and conferences on the Lumber Code sent out by the Association to all Southern pine operators in the 17 states in producing territory, mentions that the subjects to be discussed and decided upon, vitally affect every lumber manufacturer in the Division.

The subject of classification of mills entitled to receive price differentials and suggestions for modifications of existing regulations concerning this subject will be a feature of the meeting on April 4.

Important reports will be made by every Administrative Committee in the Southern Pine Division covering their work since the adoption of the Lumber Code and recommendations will be made for future policies and activities. Officers, directors and committees will be elected for the coming year. The Lumber Code is an undertaking in industrial self-government. To the extent which each manufacturer participates in the undertaking the Code will be successful.

Mr. Berckes stated that the administrative agency now has record of approximately 10,000 individual Southern pine mills throughout the Division, and the 1934 convention and code conferences are expected to be attended by the largest number of manufacturers ever brought together in the history of the industry.

L. O. Crosby of Picayune, Miss., president of the Association, has called a meeting of Committees and Directors on April 3 preceding the general meeting of subscribers on the 4th and 5th.

A series of six or more conferences of Southern pine manufacturers will be conducted by Secretary-manager Berckes in various cities throughout the South for the purpose of furnishing full explanation of all questions and matters relating to the Lumber Code and its administration and enforcement, and also to give individual manufacturers an opportunity to present their own views.

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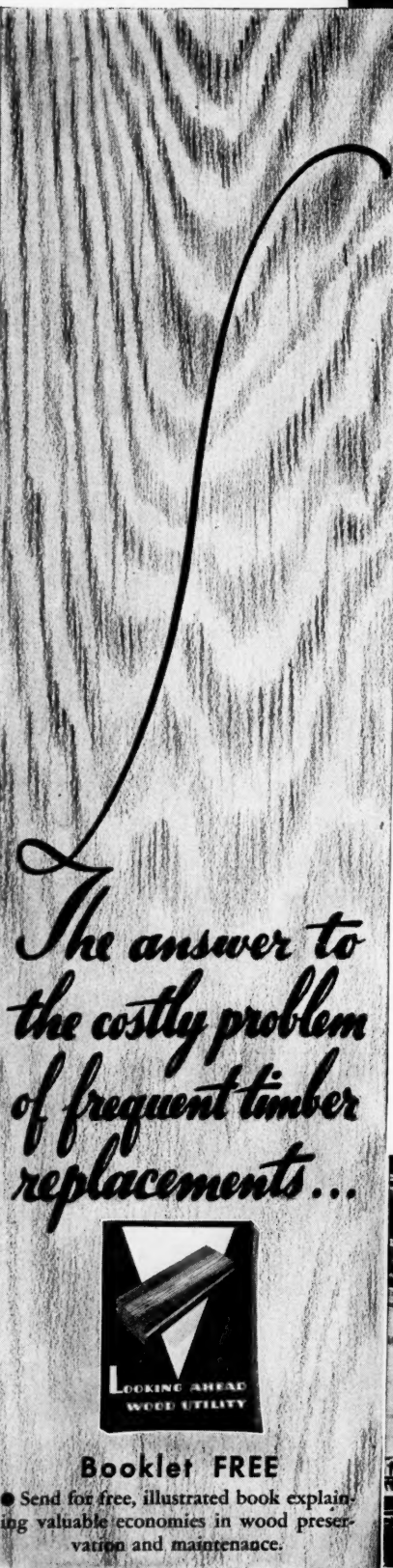


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